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TRANSACTIONS

OF THE

Medical Association

OF

GEORGIA

FIFTY-EIGHTH ANNUAL SESSION

1907

ATLANTA, GA.
PUBLISHED BY THE ASSOCIATION
1907

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"RESOLVED, That this Association shall not be considered as indorsing views of authors of papers published in connection with the Transactions, unless definitely so indorsed in the Proceedings of the Association.

"RESOLVED, That the above resolution appear annually upon the title-page of our published Proceedings."

Transactions 1873.

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*Dr. Louis H. Jones asked for a leave of absence of one year, and Dr. Claude A. Smith was elected by the Council to serve as Secretary-Treasurer.

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MINUTES

OF THE

Medical Association of Georgia.

Fifty-Eighth Annual Session.

FIRST DAY—MORNING SESSION.

SAVANNAH, April 17, 1907.

The Association met at the De Soto Hotel, and was called to order at 10:30 a. m. by the President, Dr. H. H. Martin, of Savannah.

Prayer was offered by the Rev. William L. Pickard.

The President then introduced Mayor George W. Tiedeman, who delivered the following

ADDRESS OF WELCOME.

Mr. President and Members of the Medical Association of Georgia:

It is with great pleasure that I, on behalf of the city of Savannah, welcome you into our midst and extend to you the freedom and hospitality of our city. I trust you will find Savannah so attractive and interesting and our people so cordial and considerate that when the time arrives for each of you to depart for your respective homes, there will exist a feeling of regret at leaving us, and that the

desire to repeat your visit will be so strong that we will have you with us at your next convention, if not sooner. [Applause.]

I would like to have our visitors remain and make their homes with us, but from the financial viewpoint of your profession our city may not prove sufficiently attractive to them, because as evidenced by our statistics, the low death rate here shows our city is entirely too healthy. This unusual condition is due, first, to our excellent water supply and modern drainage system; to our healthy climatic conditions, and to our very zealous and efficient health officer, Dr. Brunner, who by constant vigilance bars out contagious diseases that may exist elsewhere and may seek an entrance here; second, to our being protected by a corps of proficient and honorable physicians and surgeons who are always ready and able to cope with any condition that may confront them.

The profession in which you are engaged requires men of the utmost integrity, conscientiousness and ability for its complete and succesful development. You are constantly confronted with great sorrow and suffering and must be sympathetic. You are called on to perform much charity, and, therefore, must be charitable. You are often burdened with secrets of the gravest nature, and made to see the family skeleton, and, therefore, must be honorable; and the insidiousness of disease requires that you have ability and skill.

I trust that the discussions and deliberations of your convention will be instructive and far-reaching in assisting you to a more perfect understanding of your duties and responsibilities, and give you socially a relaxation of mind that is well deserved; enable you to exchange opinions and ideas that will be of value to you and the world at large, and that you may return to your daily duties re-

freshed in body and mind and better equipped in every way to relieve suffering humanity. [Applause.]

Dr. E. R. Corson, of Savannah, was introduced, and delivered an address of welcome on behalf of the local medical profession, as follows:

ADDRESS OF WELCOME BY DR. CORSON.

Mr. President, Members of the Medical Association of Georgia:

I have the honor and the pleasure in behalf of the medical profession of Savannah to welcome you all to our city. That this welcome is a hearty one I am sure will be shown to you in many ways before the time comes for you to return to your homes. You have come to us not only to give us the pleasure of welcoming you and of entertaining you as best we can, but you bring with you much which will aid us in our common work.

These annual gatherings are our harvest times. The fruits of the year's work are gathered in, and workers in a common cause, united by good fellowship, stimulated by the high aims of our profession, inspired by the spirit of progress, join hands and gain renewed strength and fresh courage for the work ahead.

While we can look back into the past and see how these high aims and this spirit of progress were ever working towards better things, these powers never had the intensity of meaning which they have to-day; we must move on *nolens volens*. A glance at the work now going on in our profession is startling. The pure scientific spirit, the experimental spirit, the love of knowing the truth, the spirit of philanthropy in its broadest sense, are all aglow in their eagerness to move on to something better. Think of our growing literature, of our hospitals

and laboratories, of our universities and societies, of the meetings for the cities, for the States, meetings for all the countries in the world when many cross half the earth to meet the workers of the other half, to get new thoughts as they pass from the lips, and the inspiration which comes from personal contact. And what is most inspiring of all, we can see the results of this great activity and watch our science grow from year to year. And we are meeting here to-day animated by the same spirit. Let us realize its full meaning, let us appreciate its power for good, let us rejoice that we are still in the flesh to sense its glories, for it has become a great privilege to be alive.

A glance at the program of work before us shows us that a goodly number of members of the Association from all parts of the State have come to us to give us the benefit of their thoughts and presence. These papers surely mean good, honest work, and not "the frivolous work of polished idleness."

When we look at the great periodical literature issued every week and the vast number of medical papers which are written, the thought must have come to us at times that we are animated by too much zeal, to quote the expression of a great French philosopher.

As Pope once humorously wrote:

"Fire in each eye, and papers in each hand,
They rave, recite and madden round the land."

And while Pope, when he penned these lines, did not refer especially to our profession, he did give us a sly dig when he wrote:

"Most authors steal their works, or buy;
Garth did not write his own dispensary."

But let us admit that our papers are sometimes "somebody else and water," and still, if we look at the matter properly, we must see the good which comes from formulating even borrowed thoughts. To think new thoughts in these days is a great achievement, to think even one new thought is no mean effort and may require a book to give it to the world, and many minds may still take it up and help grow its wings. Did ever a schoolboy write his set composition and not at least help himself by the effort, even though the schoolmaster grew weary of its reading? Many as are the papers which come before our societies and appear in our journals, it would be well for our science if each and every one would appreciate the value of careful clinical records and the writing down in black and white of the thoughts and observations which our every-day work is constantly suggesting. Many a clinical record which seems at the time of value only to the recorder may prove to be of value to all coworkers. Careful notes mean at least an effort at careful observation, and careful observation means progress in our knowledge and treatment of disease. Many of the greatest discoveries have come through the observation of apparently trivial things, and, at times, of apparently unlikely things. Lord Raleigh, the other day, in a lecture before the Royal Institution, spoke of the value of investigating what seems unlikely. The man who is attracted to little things and notes down his observations, is pretty sure to find something of interest and importance in the long run. This faculty of observation is in many respects the most interesting, as it is the most potent of all the intellectual faculties. It is the mother of them all. It incites to the highest order of reasoning, to the careful weighing of evidence, to comparison, to what Professor Tyndall called "the scientific use of the imagination."

We are apt again to find this faculty where we least ex-

pect it. Great learning, as we understand that term, does not necessarily favor it. The patient observer is usually quite another type. There is no pride of learning, only the delight of observation, of knowing the causes of things. The physician whose surroundings and circumstances debar him from great centers of population and a great mass of clinical material, is apt to feel that his own little world has not much to offer in the way of research. He can not make a greater mistake. Many of the greatest lights in medicine were at one time simply country doctors. You often hear it said that the country doctor's work is a jog-trot and routine work, but I believe that the very busy man in a large city is just as liable to get into the same routine and jog-trot if he lacks this great gift of observation. It grows by what it feeds on. The familiar and the commonplace take on a new interest. It discovers connecting threads, and the meaningless becomes significant and fruitful. That a delightful and instructive book can be made out of old clinical records has been shown us by Sir James Paget in his "Studies of Old Case Books." Therefore we can not have too many clinical notes and medical papers that are in any way honest efforts at careful observation and original thought. Thus it is that physicians all over our broad land are meeting together and reading papers and exchanging views in the hope of picking up priceless observations bearing upon our science and practice. And good must come from it all in spite of a large waste.

Let us, therefore, give an eager ear to these papers before us lest we miss some good thoughts, perhaps in homely dress retired to a corner for very bashfulness; it is often a way with great thoughts. Let us be quick to praise where praise is plainly due. And let us not forget, too, that good, honest criticism, even though it reach the point of righteous indignation, is wholesome and good.

And finally let us shun the mere carping spirit which is the enemy of truth and always bears a sneer upon its face. It has but one thought—*nil admirari*—the dry rot of the brain and of the spirit.

But there is another side to this gathering. Since we last met we have done a year's work, a good, long year of work, and we have brought with us some of the results of that work. It is recess time. To give each other the benefit of our thoughts and experiences is in itself a pleasant relaxation. Let us make the most of the occasion. It is a time to cultivate the social side of our natures, to know each other better as men, to make new friends, to renew old acquaintances and friendships, to cultivate the gentler virtues which we are so apt to forget when the sterner duties of our every-day work engross us. The time is propitious in spite of April showers. You have come to us in the springtime, when Savannah is most beautiful. While we feel that Savannah has its beauties the year round, while we always have with us the subdued greens of pine and palm and oak, we now have a vegetation where tree and shrub and herb vie with each other in their spring dress, with charms worthy of a great poet to describe. That you can enjoy these beauties with us will make them doubly beautiful. As fancy prompts you may stroll through our parks and squares, the spiracles of our city, and see much to interest you; or you may stand upon our busy wharves and watch the toil of commerce and men going down to the sea in ships. And we hope to take you down to that great sea itself and let you see its beauties and feel its moods and all the charms of that subtle sympathy, that "pathetic fallacy" of Mr. Ruskin, which this great old ocean so fully realizes. Or you may wander by our salt marshes, with the winding rivers and the long green stretches of marsh, rimmed by the distant pines, a landscape with its

own peculiar charm, which a well-known poet of the South has sung for us. But it is idle for me to describe these beauties for you; they are for you to see and feel.

Follow the injunction of Horace:

"Carpe diem, quam minimum credula postero," and be "rich in the simple worship of a day."

Again, in behalf of the medical profession of Savannah, I bid you welcome, and when this meeting has become a part of the history of this Association, may the memory of your short stay with us be ever a pleasant and an abiding one.

Dr. Thomas D. Coleman, of Augusta, was asked to respond to the addresses of welcome.

He said:

Mr. President and Gentlemen of the Association:

A response to such words of welcome is in the nature of things an arduous process, hence I find it difficult under the circumstances to voice the sentiments which have been aroused within me.

The word "Savannah" has a musical cadence that is delightful to me. My eyes first saw the light on the banks of the majestic Savannah. I have always felt that our government made an oversight in allowing these two sister cities, Augusta and Savannah, to be separated by a bar; a sand bar, it is true, not very formidable from a popular standpoint, but a very great drawback from the standpoint of obstruction to the progress and prosperity of these two cities and to the State at large. We have a tradition up in Augusta that whosoever drinketh the waters of Savannah always returns for a second drink [Laughter], and it seems to me especially fitting that we should come back to Savannah a reunited medical asso-

ciation to again partake of its bounteous hospitality. In this connection it may not be out of place to mention an experience of my father, who was an interne in Blockley Alms House in Philadelphia prior to the war. In his rounds through the wards he came across an old negro who had purchased his freedom and had been to Siberia to enjoy the blessings of freedom. He soon tired of it. He found it was a failure, and in making his way back to Georgia and hearing my father was a Georgian, he made known his intention to my father. My father said to him: "Old man, you can not go back to Georgia; the law prohibits a freed man from going back to that State." The old negro replied: "I guess I can go back there and lie on the old banks of the Savannah, and I reckon they won't throw me in." [Laughter.]

I never come to a gathering of this sort that I do not have a higher opinion of my profession, and I return to my home a broader and better man. If you will consider the number of men who attend these meetings, those who are active in reading papers and discussions, and doing all they can for the relief of suffering humanity, you must have a higher idea of our profession. [Applause.]

I can not prolong these remarks. On behalf of the Association, I beg to express our thanks for the generous welcome which has been extended to us in this beautiful city, famed as it is for the nobility of her sons, the beauty of her daughters and her bounteous hospitality. [Loud applause.]

The next order was the report of the House of Delegates, which was read by Dr. M. A. Clark. (See minutes of the House of Delegates.)

On motion, the report was accepted.

Dr. Ralston Lattimore, chairman of the local committee of arrangements, presented the following report:

REPORT OF COMMITTEE OF ARRANGEMENTS.

Your committee of arrangements beg to report as follows:

The general session of the Association will be held every morning from 9 to 10 a. m. Following the general session this room will be occupied by the surgical section. The banquet hall on the floor above will be used for the section on general medicine. The room adjoining this one, the gentleman's smoking room, will be used by the Board of Councilors and by the House of Delegates.

Ample provision has been made for medical and surgical exhibits in the hall rooms adjoining the banquet hall. The banquet hall will be used for Dr. Oertel's lecture on tuberculosis, to which members of the Association and their ladies are invited.

We very respectfully submit the following plan of entertainment. Following Dr. Oertel's lecture this Wednesday evening at 9 o'clock in banquet hall, the members of this Association and their ladies are cordially invited to participate in the gayeties of the Guards' Bazaar, Bull and Charlton streets.

Thursday evening there will be a banquet at the Casino, Thunderbolt, at 9 p.m. Banquets at Thunderbolt are always unique. It has been rightly said that a visit to Savannah without a fish supper at Thunderbolt is as incomplete as a visit to Rome, Italy, without seeing St. Peters. Some of the best post-prandial orators in the Association have kindly consented to respond to the toasts. All who attend, and the committee of arrangements hopes this will include every member of the Association in Savannah, may expect to have plenty to eat, to drink and smoke and lots of fun and a good time. The cost per

plate will be $2, which includes transportation to and from Thunderbolt. Dr. Jones will have charge of tickets.

Friday afternoon at 1:30 p. m., immediately after adjournment, the members of the Association and their ladies will be the guests of the Chatham County Medical Society. The committee has planned a good old-fashioned oyster roast at Tybee Island. The train schedule and the oyster roast have been planned to suit all. The flowing bowl will be filled with the famous artillery punch, the kind that knocked Dewey out after he had successfully dodged and baffled the guns in Manila Bay. A visit to Savannah, without a drink of artillery punch is incomplete.

The committee expecting all members of the Association to be present, has arranged the Tybee train schedule with this object in view.

Mr. Wilson, photographer, will photograph the members of the Association at the De Soto Hotel Thursday at 10 a. m. The privileges of the Hussars' Club, Oglethorpe Club, Guards' Club, Yacht Club and the Telfair Academy of Arts and Sciences are extended to the members of this Association.

Badges have been provided for all members of the Association and also members of their families who may accompany them. The members will wear white badge, the delegates blue, the Councilors purple, and the committee of arrangements red.

Your committee will at any time give, most cheerfully, information desired.

On motion, the general session adjourned until 9 a. m. Thursday.

SECOND DAY—MORNING SESSION, APRIL 18.

The Association met at 10 a. m., and was called to order by President Martin.

Vice-President J. W. Palmer took the chair, and President Martin delivered his address.

The report of the Secretary was called for.

The Secretary stated that his report and other reports are first presented to the House of Delegates, and then will be reported by that body back to the Association for final disposition.

The next order was the report of the House of Delegates, which was read by Dr. M. A. Clark. (For report, see minutes of House of Delegates.)

Dr. Jones moved that the report be adopted, which motion was duly seconded by several members and carried.

On motion, the Association adjourned until 8 p. m.

NOTE: Thursday afternoon. The afternoon was devoted to a scientific exhibit. Pathological specimens of interest, new appliances, or apparatus, instruments, etc., were shown.

SECOND DAY—EVENING SESSION.

Dr. T. E. Oertel, of Augusta, addressed the members of the Association and laity on tuberculosis, his remarks being illustrated with numerous lantern slides.

Adjourned.

THIRD DAY—MORNING SESSION, APRIL 19.

The Association met at 10 a. m., and was called to order by President Martin.

The Secretary read the minutes of the House of Delegates.

The President suggested, before adopting the report as a whole, that the members of the Association discuss freely and thoroughly the question of whether the scientific work shall be divided into sections.

Dr. R. R. Kime moved that the report of the House of Delegates be adopted as a whole. Seconded by Dr. Clark.

Dr. L. G. Hardman moved as a substitute that the report be adopted, with the exception of that part pertaining to the division of the scientific work of the sections, and that that part of the report be now considered.

The substitute was seconded, accepted, and carried.

After free discussion, relative to dividing the scientific work into sections, Dr. M. A. Clark moved that the County Medical Societies be instructed to take a vote on the question of whether the scientific work of the Association shall be divided into sections or not, and then advise the Council within the next six months of their action.

This motion was seconded by several and carried.

Dr. L. G. Hardman presented the following preamble and resolution:

WHEREAS, The Jackson County Medical Association has arrangements made for the erection of a statue to Crawford W. Long, the discoverer of anesthesia by sulphuric ether, on the 30th day of March, in the year 1842; and,

WHEREAS, The exact location in the city of Jefferson is known where the first operation was performed under anesthesia; and,

WHEREAS, The city of Jefferson and the people of Jackson county are very anxious to entertain the doctors of Georgia in honor of this great discoverer, and hereby tender a most cordial invitation to meet there at their

annual meeting in 1909, for the purpose of unveiling said monument; therefore, be it

Resolved, That it is the unanimous sentiment and anxious desire, that the Medical Association of Georgia meet with the cities of Jefferson and Athens at the annual meeting in 1909, and that the profession of Georgia interest themselves and see that every doctor that can possibly attend be present at the unveiling exercises.

Dr. Louis H. Jones moved, it is the sentiment of the Association that it would be fitting and proper for the Medical Association of Georgia to meet at Jefferson and Athens in 1909, to be present at the unveiling exercises of the monument contemplated to be erected to the memory of Dr. Long, and that this in no way binds the Association to anything or influences its future action. Seconded.

Dr. Holliday moved to amend by incorporating, that the Association heartily appreciates the efforts of Dr. Hardman and his associates in thinking so far ahead.

The amendment was seconded, accepted, and the original motion, as amended, was put and carried.

Dr. Bloomfield offered the following amendment to the By-Laws, section 3, chapter 6: After the words "scientific medicine" insert "It shall notify the Legislative committee of each county society of all intended medical legislation."

Dr. Armstrong, of Atlanta, offered the following amendment relative to changing the date of the annual meeting:

Resolved, That the Constitution of the Medical Association of Georgia be amended as follows:

Article VIII. Strike out "third Wednesday in April" and insert "first Wednesday in May."

Dr. J. C. Bennett, of Jefferson, presented to the members a postal card photograph showing the exact spot where Dr. Long's discovery was made.

On motion, the Association then adjourned, to meet on Tybee Island at 3 p. m.

THIRD DAY—AFTERNOON SESSION.

The Association reassembled at Tybee Island, pursuant to adjournment, and was called to order by President Martin.

The first order of business was the election of officers.

The President appointed as tellers Drs. White, Hiers, Hoke and Cunningham.

The balloting resulted in the election of the following officers:

President, Dr. M. A. Clark, Macon.

First Vice-President, Dr. Ralph M. Thomson, Savannah.

Second Vice-President, Dr. E. E. Murphy, Augusta.

Councilors: Fifth District, Dr. E. C. Davis, Atlanta; Sixth District, Dr. T. E. Drewry, Griffin; Seventh District, Dr. A. T. Calhoun, Cartersville; Eighth District, Dr. J. C. Bloomfield, Athens.

Delegates to the American Medical Association, Dr. George R. White, Savannah, and Dr. H. F. Harris, Atlanta.

Fitzgerald was selected as the place for holding the next annual meeting.

The President appointed Drs. George R. White and H. McHatton to escort the newly-elected President to the chair.

The retiring President, Dr. Martin, in introducing his successor, thanked the Association again for the distinguished honor that had been conferred on him, and also for the kindness, courtesy and leniency extended to him by the members in presiding over the sessions.

Dr. Clark, in accepting the presidency, said:

Gentlemen of the Medical Association of Georgia:

It is said that the "heart feels most when the lips move not." This is the occasion when that happens. I feel so much that I can hardly say anything. You have shown by your action, gentlemen, that I am worthy of the highest position in the profession of Georgia. I shall strive to prove worthy, but, gentlemen, in order that I may prove worthy, you must support and cooperate with me. [Applause.] Your President, your Councilors, working earnestly and seriously, can not make the Association the success that it should be without the help of each individual member, and I bespeak for the work of the new year the hearty cooperation and zealous work of every member of this Association. I ask you, when you return to your homes, to enlist the interest of each member and help to keep your county societies well organized and interested, and if you will do that, the results next year will show that we have done good work, and then my heart will indeed be glad, for I feel you will not have made a mistake in giving me this high position. [Applause.]

There being no further business to come before the meeting, on motion, the Association adjourned to meet in Fitzgerald on the third Wednesday in April, 1908.

MINUTES OF HOUSE OF DELEGATES.

SAVANNAH, GA., April 16, 1907.

HOUSE OF DELEGATES.

The first session of the House of Delegates was called to order at 3 p. m. by President Martin.

The report of the Committee on Scientific Work was

called for, and in the absence of the Chairman, Dr. J. C. Olmsted, the Secretary, stated that the chief work of the committee was in the preparation of the program which spoke for itself, and the committee presented the program to the House of Delegates for approval, or such disposition as the members saw fit to make of it. The scientific work was divided into two sections.

On motion of Dr. Williams, the program was adopted as presented by Dr. Jones.

Under "Unfinished Business," Dr. M. A. Clark stated that according to the Constitution and By-Laws no provision is made for honorary members; that this matter was brought before the House last year, and he was appointed to prepare a resolution or amendment covering the same. Accordingly, he presented the following:

"Any member for old age, length of service, or other good reason, may, upon recommendation of the Board of Censors, be elected to honorary membership of his county society without dues. Such member shall be enrolled as honorary member of his county society and this Association, and shall be entitled to all of the privileges of the Association." (To lie over until the next sessison.)

Dr. Clark also moved that the old list of honorary members be preserved and printed in the Transactions, having the Secretary add the other honorary members from the different county societies that may be elected. Seconded.

The Secretary said that inasmuch as there was no provision in the Constitution for the publication of such a list, he left it out of the Transactions this year.

Carried.

The Secretary read the following amendment to the Constitution, which was offered by Dr. T. E. Oertel last year:

Article IX, section 3. Strike out "and without nomination," and insert "upon nomination of the House of Delegates, no member of the House of Delegates to be eligible for office of President."

It was moved that this amendment be laid on the table, which was seconded and carried.

The Secretary stated that there was a question he desired to bring before the House of Delegates, namely, that in some counties there were members who, for some reason or other, did not wish to join the State Association, but who were willing to become members of county societies. He had stated to the Secretaries of some of the county societies who had consulted him regarding the matter, that his understanding of the Constitution was that a man could not join a county society without becoming a member of the State Association, the whole object and purport of the present Association being that the county societies constitute the units of the Medical Association of Georgia.

In order to bring the matter before the House of Delegates, Dr. Jones moved that it is the sense of the House that a man can not join a county society without becoming a member of the State Association. The motion was seconded by several.

After considerable discussion, which was participated in by several of the members, the President ruled the discussion and motion of Dr. Jones out of order. He further ruled that dues paid to the county society entitled a physician to membership in the State Association. If he did not care to take advantage of membership in the State Association he was not forced to do so, but he is a member of the State Association from paying dues in the county society, and that those dues are not divided in any way.

Dr. Lattimore presented his report as Chairman of the Local Committee of Arrangements.

On motion of Dr. Clark, the report was accepted and the committee continued.

It was moved that the General Association adjourn at 10 a.m., Friday, to meet again at Tybee Island at 2 p.m.

Seconded and carried.

Dr. Michael Hoke called attention to the organization of the Southern Medical Association, saying that it was a purely scientific body. Any member of the Medical Association of Georgia could become a member of it. The scientific work was divided into sections.

He moved that the Medical Association of Georgia endorse this new association.

This motion was seconded by Dr. Clark, and carried.

On motion, the House of Delegates then adjourned.

SECOND SESSION OF THE HOUSE OF DELEGATES.

April 17, 1907.

The House of Delegates met at 2 p.m., and was called to order by Vice-President Oertel.

Under the head of "Unfinished Business," Dr. M. A. Clark referred to a resolution which he had previously introduced regarding honorary members, and on motion of Dr. Jones the resolution was adopted.

HONORARY MEMBERS.

Any member for old age, length of service, or other good reason may, upon recommendation of the Board of Censors, be elected to honorary membership of his county society without dues. Such member shall be enrolled as honorary member of his county society and this Associa-

tion, and shall be entitled to all of the privileges of the Association.

Dr. James H. Crawford asked as to the age limit for old members.

The Secretary replied, he should not think there would be any definite age limit; that this should be left to the Board of Censors of each county medical society.

The next order was reports from Councilors. Reports of Councilors from the following districts were made: First district, Dr. J. Lawton Hiers, Savannah; Second district, F. D. Patterson, Cuthbert; Third district, the Secretary, in the absence of Dr. Barnum; Fourth district, Dr. W. L. Fitts, Carrollton; Fifth district, Dr. E. C. Davis; Sixth district, Dr. M. A. Clark, Macon; Seventh district, Dr. A. T. Calhoun, Cartersville; Eighth district, Dr. J. C. Bloomfield, Athens; Ninth district, Dr. W. B. Hardman, Commerce; Tenth district, Dr. W. W. Pilcher, Warrenton; Eleventh district, Dr. J. D. Herrman, Eastman.

Dr. Claude A. Smith moved that the reports of the Councilors be adopted, and that each Councilor be reimbursed for the money expended by him in the orgainzation of societies.

Seconded and carried.

On behalf of the Richmond County Medical Society, Dr. Oertel presented the draft of a bill defining expert witnesses and providing compensation for the same.

This bill was referred to the Committee on Public Policy and Legislation.

On motion, the House of Delegates adjourned.

THIRD SESSION.

April 17, 1907.

The House of Delegates met at 3:20 p. m., and was called to order by the President.

The report of the Committee on Public Policy and Legislation was called for, and was read by the Secretary, in the absence of the Chairman, Dr. Baird, as follows:

To the Medical Association of Georgia.

GENTLEMEN: The Committee on Public Policy and Legislation ask leave to submit the following report:

The following bills were introduced at the last session of the General Assembly, but on account of the rush of business toward the close of the session, they did not come before the House for final action, so that none of them were passed:

1. A bill to provide compensation for expert testimony in the courts of this State.

2. A bill to authorize the several medical examining boards in this State to revoke licenses for unprofessional conduct.

3. A bill to provide for compulsory vaccination of school teachers and pupils in this State.

4. A bill to establish a State Sanitarium for Tuberculosis.

5. A bill to authorize the State Board of Health to furnish serum for the treatment of hydrophobia.

The bill to provide for the registration of nurses, referred to in the Transactions of the Association for 1906, was not presented and, consequently, did not receive the attention of this committee.

Dr. L. G. Hardman, of this committee, was a member

of the last House of Representatives, and he will be in the Senate of the next Legislature. He had supervision of these bills, and he will be able to supplement this report by such verbal explanations as may appear desirable.

Respectfully submitted.

(Signed) JAS. B. BAIRD,
L. G. HARDMAN,
W. C. LYLE,
Committee.

On motion of Dr. Claude A. Smith, the report was adopted.

The report of the Committee on Necrology was presented by the Chairman, Dr. T. J. McArthur, without being read, and was referred to the Committee on Publication.

REPORT OF COMMITTEE ON NECROLOGY.

It is with deep sorrow and regret that your Committee on Necrology has to report the death of so many of the noble, unselfish members of this Association since our last meeting. It is the last sad privilege afforded the Association of officially paying to the memory of her honored dead that tribute of respect which is due them, and we should esteem it a pleasure.

While frequently in the past we have been called upon to note the demise of many of our associates, it has seldom been our duty to report so many of our brightest and most useful members, to whom death came while yet they were in the full tide of their usefulness in the discharge of duty. It seems that the Great Reaper, this year, has chosen men of merit and real worth, which has marked them as men of no ordinary skill and ability, and given them high places in the esteem of their professional brethren and in the hearts of the communities in which

they lived. With bowed heads and sad hearts we present the following names to be transferred from the roll of active membership to "In Memoriam":

Dr. J. C. LeHardy,
Dr. J. E. Pritchard,
Dr. Wm. A. O'Daniel,
Dr. Joseph C. Mull,
Dr. Hunter P. Cooper,
Dr. E. H. Nichols,
Dr. C. D. Hurt,
Dr. Wyatt C. DeLamar.

Your committee has endeavored to secure fitting memorials for all these, and has secured one for most of them, which we herewith submit for publication in the Transactions.

Respectfully submitted.

(Signed) THOS. J. MCARTHUR,
Chairman Committee on Necrology.

Dr. Charles Davis Hurt, son of Joel Hurt, originally of Putnam county, Georgia, but subsequently of Russell county, Alabama, was born in Russell county, Alabama, July 26, 1843. He received his early education in the common schools of his native county, where he resided until the outbreak of the Civil War, in 1861, when he entered the Confederate army, enlisting first in a company of artillery, composed mainly of his friends and neighbors, and commanded by Captain Robert A. Hardaway. After nine months of active service he was honorably discharged on account of illness, but, upon his recovery, he promptly reenlisted in the Forty-fifth Alabama Infantry. He was, however, soon transferred to a cavalry regiment, with which he served throughout the war.

After the cessation of hostilities, Dr. Hurt located in Macon county, Alabama, and there engaged in farming until he began the study of medicine. He attended his first course of lectures at the Atlanta Medical College in 1869-70, and graduated at the Augusta Medical College the following year. He first located at Notasulga, Alabama, but after a year removed to Hurtsboro, where he practiced his profession until his removal to Columbus, in 1884. During his residence in Columbus he held, with credit to himself, a number of public offices of honor and trust.

In 1892 he changed his residence to Atlanta, where he soon established himself in the confidence and esteem of the community.

Dr. Hurt has been a prominent member of the Medical Association of Georgia since 1890. He was also a member of the Fulton County Medical Society, of several hospital medical boards, and the chief surgeon of the Atlanta Street Railway system. For several years he was professor of materia medica and therapeutics in the Southern Medical College, and at the time of his death was a member of the faculty of the Atlanta School of Medicine.

In his daily life he exemplified the virtues of a sincere Christian, and was a devout member of the Methodist church. In all of his relations—professional, civil and social—he proved himself a man of high character, of true dignity, of earnest purpose and of inviolable fidelity.

He was married first to Miss Mary Louisa Grant, in 1863, by whom he had eight children. His second wife was Miss Louise Miller, of Hendersonville, N. C., who, with one son, survives him.

Dr. Hurt died from chronic Bright's disease, at his home in Inman Park, Atlanta, August 12, 1906, after an illness covering a period of several months. All through his weary confinement he bore his infirmities, conscious

of their gravity, with patient fortitude. He looked toward the future with a Christian's trust, sustained by a Christian's faith, and abiding in the assurance of a Christian's reward, he met the inevitable with serene confidence and with calm resignation.

In the death of Dr. Wyatt C. DeLamar, which occurred August 24, 1906, at his home in Harris county, Georgia, the medical fraternity lost a most talented and noble fellow-worker. Dr. DeLamar was born August 23, 1874. He received his early training in the schools of his native county, and his medical education in the Medical Department of the University of Georgia, graduating with the class of 1900. After his graduation he returned to his native county to engage in the practice of his profession, among the friends of his youth, who held him in high esteem. He addressed himself earnestly to the practice of medicine, and by assiduous study and devotion to labor earned a recognition at the hands of the medical profession and the public which secured for him a large clientele and a successful career. In his death we retain a memory of a good citizen, an estimable man and distinguished practitioner of medicine.

The following resolutions were passed at the regular meeting of the Floyd County Medical Society, held October 27, 1906, on the death of our brother and Vice-President, Dr. J. C. Mull:

WHEREAS, An All-wise Providence has seen fit to remove by death Dr. Joseph C. Mull, our highly-esteemed and beloved brother, Vice-President of our Society; be it therefore

Resolved, first, That in the death of Dr. Mull not only the city, but county at large has lost one of her most prominent and useful physicians. Although compara-

tively a young practitioner, he had by his indomitable energy, studious habits and charitable nature won for himself an enviable reputation. He was kind and true to his friends; as a citizen he was ever alive to the interest of the country, and as a physician always ready to administer to the sick and afflicted. Whether in the home of the wealthy or the poor, he was always the attentive physician and sympathizing friend.

Second, That in his death our Society has lost one of its most useful members and the medical fraternity one of its most energetic workers. We extend our deepest sympathy to the bereaved family and friends, especially to the grief-stricken wife and children, whom a Divine Providence has seen fit to afflict so severely.

Third, That a copy of these resolutions be furnished the family of our deceased brother, and the same spread upon the minutes of our society; also that a copy be furnished the Secretary of the Georgia State Medical Association and county papers.

(Signed) L. P. HAMMOND,
T. R. GARLINGTON,
W. L. FUNKHOUSER,
Committee.

William Alonzo O'Daniel, M.D., was born in Twiggs county October 31, 1865; died August 7, 1906. He attended the common schools of the county until 1882, when he entered Emory College. Whilst at Emory he joined the Methodist church, of which he was a faithful member until his death. He was a Knights of Pythias and a Mason.

He attended the Kentucky School of Medicine and graduated with honor in 1885.

After his graduation he associated with his father, Dr.

William O'Daniel, of Bullards, Twiggs county. In 1889 he moved to Macon, and was soon elected city physician, which place he creditably filled until August 1, 1891, when he succeeded his brother, Dr. Mark H. O'Daniel, as assistant physician, Georgia State Insane Asylum. During his residence at Milledgeville he was appointed by Governor Atkinson a member of the State Medical Examining Board, holding at different times the offices of secretary, treasurer and also president of the board. In the fall of 1902, on account of failing health, he resigned his position as assistant physician to the State Asylum, and returned to his native county to recuperate, and to administer upon the estate of his father-in-law, Captain W. E. Carswell. On November 25, 1891, he was married to Miss Mattie C. Carswell, of Jeffersonville, Ga. One daughter, Orline O'Daniel, was born to them, and both the daughter and wife survive him. He leaves a mother, sister and brother. The latter, Dr. Mark H. O'Daniel, is a member of this Association.

He joined the Association many years ago, loved it, and always attended its sessions whenever he could. Although he had friends among men of high standing in professional and business affairs, he was the warm-hearted and true friend of the humblest citizen. Towering as he did in the fearless heights of Christian manhood, when the end came he met it bravely, triumphantly. Having expressed a full assurance of his acceptance with God, and having requested his loved ones to meet him in those heavenly mansions, whither he was hastening, the end came and his soul had passed away.

HUNTER POPE COOPER—1860-1906.

Dr. Cooper was but forty-six years of age when he fell a victim to that almost inevitably fatal and short-lived

monster, meningitis. Although he laid down his scalpel, ceased to teach or practice, with the sun still shining on his back, he had easily enrolled himself in the very front rank of the profession in Georgia; indeed, had no superior as an all-around doctor in the South; for his mind was too broad to content himself with a specialty—the knowing of everything about something—he essayed to go further, and know something about everything. Soon after he began to practice in Atlanta Dr. H. V. M. Miller, then dean of the Atlanta Medical College, recognized his ability, nominated him to fill the chair of chemistry, made vacant by the death of Dr. J. H. Logan. This was a test of his grit; but he did not hesitate. He has often told me it was the hardest task he ever put upon himself; yet manfully did he stick to it for several years. When Dr. Armstrong died in harness, we gave Dr. Cooper his place —anatomy and clinical surgery. How well he filled it was prophesied by his preparation during the summer before the session opened. He was at that time doing a large practice; yet for four months he went to the college with the rising sun, and there, by himself, dissected for about two hours before breakfast. Scientific facts are secrets, and ever sealed books to the sluggard, but are delivered up to the diligent seeker. God never did and never will delegate a lazy man to make a discovery. Genius, some one has said, is a capacity to work; and, if this be true, Dr. Cooper was one, for he was a dynamo of energy. But industry, not seconded by preparation, does not lead to success. Dr. Cooper was a graduate of the Universities of Georgia and Virginia in literature; of the College of Physicans and Surgeons of New York in Medicine; and then, as a post-graduate, attended to medical schools of Berlin and Vienna; returning to America, he, by competitive examination, secured places as an interne in several of the leading hospitals in New York.

Is it strange that a man, so well equipped, should amass fortune and achieve fame? He had the good sense to labor and wait; his youth was well spent, "his riper years did not upbraid the green," so he did not come back to Atlanta, the town in which he was born, and begin a life of inglorious ease, depending on diplomas, degrees, or lineage (for no man in the State was of better family). His father, Col. Thomas S. Cooper, of the famous eighth Georgia, yielded up his gallant young life at Manassas, "by all his country's wishes blest!" His grandfather, Mark A. Cooper, a name synonymous with all that was wise, good and great in the history of the State. Dr. Cooper was happily married to Miss Henrietta Tucker, daughter of Dr. H. H. Tucker, D.D., LL.D., a noted divine and educator, at one time Chancellor of the University of Georgia. He leaves a son and daughter. The best wish I can make his boy is that his father's mantle may fall upon him!

Knowing and being stimulated by these facts, he was determined not to disgrace his family, not to throw away advantages given him by a wise and devoted mother; he never said to himself, "I will be satisfied and give up my studies." Upon the untimely death of Dr. Hardon, one of the best teachers the college ever had, Dr. Cooper succeeded him, and became Professor of Obstetrics. The universal verdict of the students, the best critics in such matters, was that he *more* than filled the chair. He was a fine business man, being gifted with great executive ability, broad-minded, yet thoroughly appreciating the fact that "while perfection is no trifle, trifles make perfection." The success of the Grady Hospital, all the tedious and multitudinous details of its early management, I know as I was on the staff with him, fell on his broad shoulders more heavily than on any three of us. He was always resourceful in professional, private and business life. One

thing always impressed me, when we saw a patient together, and that was the patient care and thoroughness of his examination. He had the confidence of his patrons to a degree seldom enjoyed by the profession. He did a large consultation practice, and this was not secured solely because of his medical ability, but largely for the reason that he was so honest and perfectly fair and professional to the attending physician. I am sure he never secured a patient by even an innuendo, for being by birth, instinct and education a gentleman, he knew no ways that were dubious. "May his tribe increase!" Knowing him intimately for near a score of years, always as my friend, as confrere, rival in the practice, and personal medical advisor, he had my love that grew to the last, my admiration that deepened as I watched him; my respect—such respect as we give only to the honest man; my confidence—the trust that is reposed in the sympathetic and skilful. Dr. Cooper, like Mark Antony, was a plain, blunt man in speech; there was no occasion ever to mistake his meaning; indeed, many thought that he was crabbed and unkind often, when it was only earnestness and candor, for I know that he had a heart within him that sympathized with his friends and humanity, which was in keeping with his great brain. Time and again have I heard the nurses at the hospitals and his sanitarium extol his consideration, patience, justice, gentleness and forbearance with them. Great as he was as a doctor, it was when seen as father and husband, friend or dealing with those under him, that you caught a glimpse of his greater soul. We can never understand why God called him so early, but we do thank God that his life was such a success that while laying it down when it was yet the noonday with him, he had accomplished more than one in a thousand does after living their three score years and ten.

And now I bid you, for a little while, my good doctor,

my compatriot, who knew no guile, a loving good-bye, and shall ever cherish with fond recollections your memory, and feel sure that a kind Father will be merciful to one who did so diligently improve the talent He committed to your care!

J. S. TODD.

322 Peachtree St., Atlanta, Ga.

The report of the Committee on Tuberculosis was read by Dr. M. A. Clark, in the absence of the Chairman, Dr. T. E. Oertel, as follows:

REPORT OF THE CHAIRMAN OF THE COMMITTEE ON TUBERCULOSIS.

As your chairman I have to submit for your consideration the following brief summary of the work done by the Committee on Tuberculosis of the Medical Association of Georgia during the year just ended.

At the meeting of the Association held last year in Augusta we were authorized and instructed by the Association to "affiliate with the National Association for the study and prevention of tuberculosis and to seek representation upon the Advisory Council of that body." In pursuance of that instruction I attended the meeting of the National Association held in Washington May 17th, 18th and 19th and laid before the Council of that body our request to be recognized as the official representative Anti-Tuberculosis Society of the State of Georgia. Said request was granted and I had the honor to represent this body upon the Advisory Council at the above meeting. We have, therefore, taken our proper position in the great movement which is headed by the National Association for the study and prevention of tuberculosis, and which looks to the welfare of the people at

large by devising ways and means for decreasing the ravages of tuberculosis in these United States.

I have a letter from Dr. Farrand, the Executive Secretary of the above body, inviting us to send a representative to the coming meeting of the Advisory Council at the annual meeting of the Association which will take place in Washington May 6th and 7th next.

It is also proper for me to report that the commission which was appointed by the Governor through the efforts of this committee to report to the Legislature relative to the advisability of the erection of a State sanitarium for tuberculosis submitted their report to the Legislature at its last meeting. As the above commission was composed of members of the Medical Association of Georgia, and was nominated for appointment by the Medical Council of that body in pursuance of a resolution introduced and passed by the Legislature through the agency of this committee it was virtually an agent of this committee and the mother body, and it seems to me proper that its findings should be embodied in this report. I, therefore, submit it entire:

REPORT.

In addition this commission had introduced the following bill, which is self explanatory:

A bill to be entitled an Act to create a State institution to to be known as "The Georgia Sanitarium for Incipient Tuberculosis"; to provide for a board of trustees for the same; to provide for the management and control of the same; to provide for the erection of certain buildings and the purchase of other property necessary to carry out the purposes of this Act; to provide for the necessary appropriations to carry out the purposes of this Act; and for other purposes.

SECTION 1. Be it enacted by the General Assembly of the State of Georgia, and it is hereby enacted by the authority of the same, That there is hereby created and established a State institution to be known as "The Georgia State Sanitarium for Incipient Tuberculosis."

SEC. 2. Be it further enacted, That there shall be, and is hereby created, a board of trustees for said institution to be composed as follows: That whoever shall be Governor, Attorney-General and Secretary of the State Board of Health of the State of Georgia shall be, during their terms of office ex-officio members of said board of trustees; that there shall be four other members of said board selected as follows: That the Council of the Medical Association of Georgia shall, upon the passage of this Act, select and present to the Governor of Georgia the names of eight members of the Medical Association of Georgia, and from these the Governor shall appoint four members of the said board of trustees, appointing one for one year, one for two years, one for three years, and one for four years, and in case of any vacancy occurring among said four members the Governor shall fill said vacancy from the list so presented to him. Annually thereafter said Council of the Medical Association of Georgia shall present to the Governor the names of two members of said Medical Association of Georgia, from whom the Governor shall select and appoint one member, whose term of office shall be four years, to fill the vacancy occurring in said board of trustees by expiration.

The salary of said trustees appointed upon the selection of said Council shall not exceed $150 (one hundred and fifty dollars) each per annum. The actual expenses also of all members of said board of trustees, including necessary railroad fare in carrying out the purposes and intents of this Act, shall be paid, upon the approval of the Gov-

ernor, from the moneys hereinafter appropriated and that may hereafter be appropriated for the purpose of carrying out this Act.

Said board of trustees shall elect its own officers and prescribe such by-laws and regulations for its government as are not in conflict with this Act or the laws of the State.

SEC. 3. Be it further enacted, That said board of trustees shall have complete control and management of said State institution, and provide rules and regulations for the management of the same, and shall appoint and fix the salaries and compensation of the officials and subordinates to control and manage said institution in conformity with the intents and purposes of this Act.

SEC. 4. Be it further enacted, That said board of trustees shall, as soon as possible after the passage of this Act, select and purchase a suitable site for said institution, vesting the title to the same in the State of Georgia, said property to cost not exceeding fifteen thousand dollars; shall erect thereon necessary and suitable administration and other buildings, and equip the same with such furniture and heating, lighting and water supply necessities and facilities as may be necessary, and such live stock, tools and other supplies as said board may deem necessary.

SEC. 5. Be it further enacted, That to carry out the purposes of this Act there is hereby appropriated out of any money in the State Treasury, not otherwise appropriated, the sum of twenty-five thousand dollars, or so much thereof as may be necessary, to be paid in such sums and at such times as the purchase of a site and construction of the buildings and the equipment of the site and buildings may require, and the Governor is hereby authorized to draw his warrant on the Treasurer for the said amount,

the same to be disbursed through such officers and in such manner as said board of trustees may determine.

SEC. 6. Be it further enacted, That for the purpose of maintaining and operating said institution for the first year, there is hereby appropriated out of any money in the State Treasury not otherwise appropriated the sum of twenty-five thousand dollars, or so much thereof as may be necessary, the same to be available and payable in such sums as may be required by said Board of Trustees, and the Governor is hereby authorized to draw his warrant on the Treasurer for the said amount, the same to be disbursed through such officers and in such manner as said Board of Trustees may determine.

SEC. 7. Be it further enacted, That said Board of Trustees shall require of patients at said institution pay, or partial pay, for their maintenance, in such sum as they may see proper, and as they may consider the patient able to pay, not to exceed ten dollars per week, any surplus from amounts paid by said patients remaining over and above the cost of their maintenance to be devoted to carrying out the general purposes and intents of this Act.

SEC. 8. Be it further enacted, That all counties and municipalities having pauper cases coming within the purview of this Act are hereby authorized to send such cases to said institution and have them cared for, appropriating for such care and maintenance such amounts as they appropriate for the care and maintenance of their other paupers in similar conditions.

SEC. 9. Be it further enacted, That said Board of Trustees is authorized to receive and care for, at said institution, such cases coming within the purview of this Act as may not be able to pay wholly or in part for their maintenance, the expense of bringing patients to said institution to be borne by the county or municipality from which

said patients come, authority for which expense is hereby given; and in case any municipality or county shall send to said institution a case not coming within the purview of this Act, and which, for that cause, shall be rejected by the management of said institution, said county or municipality is hereby authorized, and required, to pay the transportation expenses of said patient both ways.

SEC. 10. Be it further enacted, That said institution shall be strictly for the reception and care of cases of incipient tuberculosis only, and the officials, officers, and other parties, having connection or dealing with said institution are strictly enjoined against receiving or forwarding cases not coming under the strict head of incipient tuberculosis.

SEC. 11. Be it further enacted, That all laws and parts of laws in conflict with this Act be, and the same are, hereby repealed.

The session of the last Legislature being a short one the bill was not reached, and, therefore, nothing was done. I would recommend that the same bill, which has been carefully considered, be again introduced in the next session of the Legislature, provided it meets with the approval of the Association.

REPORT

OF THE

Georgia State Tuberculosis Committee

PREPARED IN COMPLIANCE WITH
JOINT RESOLUTION No. 20.

Approved August 22, 1905.

MEMBERS OF THE COMMITTEE, 1905-1906.

H. F. HARRIS, M.D.....Atlanta, Ga.
L. G. HARDMAN, M.D.....Commerce, Ga.
T. E. OERTEL, M.D.....Augusta, Ga.

LETTER OF TRANSMITTAL.

To His Excellency, Jos. M. Terrell, Governor of Georgia, and the Honorable Legislature of Georgia:

We have the honor to transmit to you herewith the report of the Georgia State Tuberculosis Committee, which has been prepared in compliance with Joint Resolution No. 20, approved August 22, 1905.

Respectfully yours,

H. F. HARRIS, M.D.
L. G. HARDMAN, M.D.
T. E. OERTEL, M.D.

JOINT RESOLUTION No. 20.

Approved August 22, 1905.

Resolved, by the Senate and House of Representatives in general court convened, That the Governor be, and is hereby, authorized and instructed to appoint a committee, consisting of three members, one of whom shall be the Secretary of the State Board of Health, the other two members to be designated for appointment by the council of the Medical Association of Georgia, to consider the question of a State Sanitarium for Consumptives; and who shall report to the next Legislature the best location for and probable cost of erection and maintenance of such an institution, together with such recommendations as they deem proper (the report to be submitted to the Legislature some time during the first twenty days of the session), the committee to serve without pay, except actual necessary expenses, which shall be paid from money in the treasury not otherwise appropriated; and the Governor is hereby authorized to draw his warrant for the same.

REPORT.

Your committee deeply regret that the following report can not be more commensurate with the great importance of the subject than has been found possible to make it.

The most unfortunate condition with which we have been confronted is the entire lack of anything like accurate mortuary statistics upon which to base calculations of the deaths in Georgia due to Tuberculosis. It is true that in our large cities mortality statistics are compiled, yet this embraces but a small part of our population, and

there is good reason to apprehend that even these estimates are unreliable.

It is, however, all too patent to even the most casual observer, that we are no freer from the scourge of consumption than are our sister States. Whether or not the disease has materially increased during the past few years is a matter of comparatively small importance. That it exists at present to an alarming extent is entirely evident. It may almost be said without fear of contradiction, that there is not a family in Georgia which has not been decimated by THE GREAT WHITE PLAGUE.

Basing our judgment upon such data as is available and preserving the most conservative attitude, we must assume that at least ten per cent. of all deaths in Georgia are due to tuberculosis. The probability is that this is far too low.

The report of the Committee on Tuberculosis to the Medical Association of Georgia at the annual meeting in April, 1905, contains the following tabulation with a computation of the cost to the State of the loss thus occasioned, basing the economic value of each life at $2,000, which, as will be shown later, is a conservative estimate on account of the fact that consumption is preeminently a disease of early adult life.

GEORGIA.	Population.	Deaths, Tuberculosis.				Cost.			
		1901	1902	1903	1904	1901	1902	1903	1904
Savannah	54,000	193	209	212	243	$ 396,000	$ 418,000	$ 424,000	$ 486,000
Macon	30,000	52	60	46	49	104,000	120,000	92,000	98,000
Augusta	49,000	112	78	95	.....	224,000	156,000	190,000	.....
Brunswick	9,200	20	17	15	10	40,000	34,000	30,000	20,000
Columbus	19,300	31	36	32	30	62,000	72,000	64,000	60,000
Atlanta	106,500	218	266	221	270	436,000	532,000	442,000	540,000
Totals	268,000	626	666	621	602	$ 1,252,000	$ 1,332,000	$ 1,242,000	$ 1,204,000

2,515 Deaths from Tuberculosis, $5,030,000.

It will be seen that upon this basis, during the four years mentioned, there has been a direct monetary loss of over five million dollars, and this in only six of our cities.

In order that clear conception of the cause and character of tuberculosis may be obtained, it may be well to quote further from the above-mentioned report from a series of letters which were prepared for publication in the public press for the purpose of educating the people.

TUBERCULOSIS—WHAT IT IS AND WHAT IT DOES.

The disease known as tuberculosis is as old as history. It affects the young and the old. It enters alike the palace of the rich and the hovel of the poor. It spares neither age nor sex nor condition. Nor is man alone its victim. Among domestic animals it is quite common. Cattle are frequently affected by it; goats and hogs, and less commonly, dogs, cats, horses and sheep. Even fowls and reptiles are afflicted with a species of tuberculosis similar to that found in the human being. Tuberculosis is common in almost every quarter of the globe. It is, however, a disease which flourishes in crowded quarters of large cities where the conditions are unsanitary and life strenuous.

The disease is caused by a germ. This germ, called the "bacillus tuberculosis," is a very small, rod-shaped plant. All bacteria are plants, not animals, and many bacteria are not only not harmful, but are so essential that life could not long exist without them. Such are the bacteria that cause putrefaction and fermentation, and those that through their action upon the soil, during the progress of their growth, break it up into simple compounds, such as may be appropriated to the use of the higher plants which

in turn are the food of animal life. Comparatively there are only a few harmful bacteria, and among these the tubercle bacillus holds high rank. More people die of tuberculosis than of diphtheria, smallpox, scarlet fever, typhoid fever, yellow fever and plague combined.

The tubercle bacillus enters the body in one of three ways:

First—Through inhalation into the lungs or throat or nasal passages.

Second—By ingestion, eating tuberculous food or drinking tuberculous milk.

Third—By innoculation, through a wound of the skin or lining of the mouth.

When the tubercle bacilli gain entrance to the body in one of the above ways they may be killed by the cells of the body or they may simply be covered up and kept from doing harm, unless they "break jail," or they may produce the disease at the point where they lie.

In the latter case the bacilli multiply, eventually an ulcer is formed and from this point the bacilli spread to more distant parts, either through the blood, or if the ulcer is on the lungs, by being inhaled or by being coughed up and swallowed, in which case they may produce intestinal tuberculosis.

As they grow they produce a poison, known as a toxin, and it is largely due to the presence of this substance in the system that the loss of flesh and other distressing symptoms are due. As the disease progresses, other bacteria enter the body and invade the tissues that have been weakened by the presence of the tubercle bacilli. These are the common germs that cause suppuration, the so-called pus organisms, and any case of "mixed infection," that is, one complicated by the presence of the pus germs, is always more severe.

The germs of tuberculosis always come from a case of

tuberculosis. They do not multiply outside of the animal body under ordinary conditions, though they may be grown upon certain substances, like beef extract with glycerine and other so-called "culture media," and have been by this means very thoroughly studied by numerous investigators.

From this brief review of what tuberculosis is we may formulate as fact No. 1 the following conclusion:

Tuberculosis is an infectious, communicable disease, due to the presence in the tissues, usually in the lungs, of the germ of consumption called the tubercle bacillus.

Next to the lungs the intestines are the most common site of beginning tuberculosis, though the disease may start in any part of the body, and may be limited to the part, or may become general. The statement has been repeatedly made that with the exception of pneumonia as many people die from tuberculosis as from all other contagious diseases combined. It is estimated that in the United States alone there die yearly from tuberculosis over one hundred and fifty thousand souls. Let us then remember as fact No. 2: *Tuberculosis causes at least ten per cent. of all deaths.*

BOSTON MEDICAL LIBRARY

But the condition is much worse than this, for the majority of the victims of tuberculosis are at the age when they have just become productive, when they are fitted to go out into the world as wage-earners. The disease is pre-eminently one of young adult life.

Between the ages of fifteen and forty, one-third of all deaths are due to tuberculosis. Between the ages of twenty and twenty-four, forty-two per cent. of the deaths from all causes are due to tuberculosis.

Now, if we were writing facts like these about some disease prevailing only in China, we should expect you to be mildly interested. We should expect you to sigh, shake

your head, and if you are a man, light a fresh cigar, and forget the matter in the press of business.

But here are well-substantiated statistics, for they have been computed by life insurance firms for the sake of money-getting, and they are not about China alone—they are true of our time and of our place. If smallpox were killing nearly one-half of our young men and maidens, do you think for a moment that you would sit with folded hands or watch the slaughter with listless eye?

We think not.

We would have ten pest-houses, if need be, and business would stagnate and cheeks would blanch and stout hearts would quail. But the marvel of marvels is that we remain so inactive, so apathetic, while this "pestilence that walketh in darkness" and this "destruction that wasteth at noonday," stalks among us and reaps the fruit of promise before our very eyes.

It is with the hope that the public will awaken to the necessity for action that this and the other articles on the subject are written.

What, then, is tuberculosis? A communicable disease caused by the tubercle bacillus.

What does tuberculosis do? With the exception of pneumonia, it kills more people than all other infectious diseases combined.

Think about this.

COMMITTEE ON TUBERCULOSIS,
Medical Association of Georgia.

The following extract is taken from the publication of the Illinois State Association for the Prevention of Tuberculosis:

"REASONS WHY ILLINOIS SHOULD HAVE A SANITARIUM FOR TUBERCULOSIS."

The fact that consumption deprives the State of those who, by virtue of their vigorous age, are most actively engaged in working for its prosperity is well illustrated by the accompanying chart, which shows that its greatest mortality rate is found in individuals twenty to forty years old. This chart, based upon the United States Census figures for the country, is the same for Illinois. Here the proportion of deaths due to consumption to the total number of deaths is highest also between the ages of twenty and forty, viz.: From 20 to 24 years, 34.31 per cent.; from 25 to 29 years, 35.34 per cent.; from 30 to 35 years, 30.68 per cent.; from 35 to 39 years, 25.09 per cent. The same ratio is to be observed in every county of the State. The chart also shows that consumption in the United States has increased at the ages of from twenty-five to fifty. Thus the oft-quoted general decrease has not yet affected those in the most active period of their lives.

As a problem of the community, the one caused by tuberculosis has no equal. This fact has already been noted above. Of great interest, however, to the public at large has become the recent increase of mortality from pneumonia. The chart given on the following page shows one essential fact, well known to physicians, but little appreciated by the public, viz.: That pneumonia kills chiefly at the two extremities of life, among the very young—under two years of age—and the old (see the white lines). At those ages where consumption reaps its greatest harvest pneumonia is a comparatively unimportant disease. This is furthermore illustrated by the fact that at that later period by far the greater number of its victims get well, while of those suffering from con-

sumption, by far the greater majority died, until the sanitarium treatment was more generally introduced.

Acute diseases, like pneumonia, diphtheria, typhoid fever, and many others, are of lesser importance from an economic point of view, because the duration of disabling sickness is so very short in comparison to the long-drawn-out course which consumption usually follows before it finally kills the patient. In the acute diseases mentioned above, the time of disability extends from one week to one month; in consumption, from one to often more than five years.

DR. CHARLES LOUIS MIX,
Northwestern University Medical School, Chicago.

DR. JAMES A. EGAN,
Secretary Illinois State Board of Health, Springfield.

From the foregoing—which might be added to indefinitely—it will be seen that consumption is of greater economic importance than any other disease with which humanity is afflicted.

The second important consideration is that tuberculosis is a communicable disease, and that each consumptive is a focus for the spread of the disease unless he conforms to certain rules relative to the care of his spittle which contains the infectious material. It has been estimated that a consumptive in the latter stage of the disease, will expectorate daily 4,000,000,000 tubercle bacilli.

These bacteria or germs have the property of again setting up the disease in another individual, provided they gain access to his body, and conditions for their growth are favorable.

If, therefore, it were possible to prevent the entrance of tubercle bacilli to the individual, the disease would soon die out, and the most feasible method of prevention is to

teach the consumptive to take the proper care of his death-dealing sputum.

It will be later shown that the sanitarium is a potent factor in such education.

We may then conclude that consumption is

COMMUNICABLE AND PREVENTABLE.

But that we may go one step further and pronounce it *curable,* is the chief triumph of modern medicine.

In support of this assertion, it may be well to quote from the eighth annual report of the Massachusetts State Sanitarium, the first State sanitarium for tuberculosis in the United States.

REPORT OF THE MASSACHUSETTS STATE SANITARIUM FOR TUBERCULOSIS.

Percentage of incipient cases with disease arrested upon dismissal from the institution:

1898-1899	64.6
1899-1900	72.9
1900-1901	73.
1901-1902	72.
1902-1903	72.6
1903-1904	75.8

The number of beds in that institution was originally 175. It was increased to 260, and is now being increased to 400.

The sanitarium in Germany for the railroad employees treated 429 consumptives in 1900, of whom 383, or 89 per cent. were discharged able to do full work.

Of those treated in 1899, 73 per cent. were doing full work in 1901.

The Imperial Health Bureau of Germany reports that

2,259 patients, consumptives, were treated in the sanitaria of the insurance board in 1899; of that number 72 per cent. were discharged able to work, and of 8,200 consumptives treated in 1897 and 1898, 71 per cent. returned to work.

The above quotations serve to illustrate the present hopeful outlook for the consumptive when placed under the proper circumstances and when the treatment is begun in the *early stage of the disease.*

In the report of the Wisconsin State Tuberculosis Commission appears the following:

TREATMENT OF TUBERCULOSIS IN SANITARIA.

Tuberculosis has been so long regarded by the public as an absolutely incurable disease that it is difficult to convince those afflicted with it that any aid can be had; and yet the results obtained show that it yields readily to hygienic measures, and in the earlier stages can be easily cured. Formerly it was thought necessary to resort to change of climate for treatment, but experience has amply demonstrated that the disease can be cured quite as readily in Wisconsin as in the West. Many cases are unable in any event to make the climatic change, and the introduction of sanitarium measures at home by the State affords succor to many who would otherwise be doomed to early death.

The methods followed in sanitaria are simply hygienic measures—open air, abundance of nourishing food and close medical supervision. In the open air the body quickly acquires a degree of resistance that enables it to throw off the disease. The experience at the Massachusetts State Sanitarium (the first State institution in this country) shows that the average period of residence is about six months. From 40-50 per cent. of all cases received

are discharged as greatly improved or cured, while over 75 per cent. of those having the disease in the early stages are practically healed.

The permanency of such cures is shown by the statistics of the Adirondack Sanitarium which has been in operation nineteen years, and in a recent census made of 1,066 cases which have been treated from two to eighteen years, 66 per cent. of those admitted as incipent cases are now well, and in 560 advanced cases, nearly one-third are now in good health. The results are being duplicated either in private or State institutions in practically every part of the country where they are being tried. The earlier the cases are received, the more rapid and larger the number of cures, but in the great majority of instances, a decided improvement is to be noted.

CLIMATE.

It was formerly thought that proper climate was the chief factor in the cure of tuberculosis, and that all that was necessary for the consumptive seeking health was to go to Colorado or California and he would find health at the end of his journey. This notion has been proven erroneous. It has been shown that the results in New England are quite as good as those achieved elsewhere, in fact, that proper conduct of the case is the essential thing, and that climate, while of importance, is a secondary consideration.

Than our own salubrious climate with its even temperature and moderate rainfall, there is none better. In fact, many consumptives annually seek refuge among us in order to escape the rigors of the northern winters. We have a wide range of choice, from the seacoast to the mountain heights, with all the gradations of soil and temperature and wealth of forest that lie between.

WHAT OTHER STATES ARE DOING.

Within the past few years the movement towards the suppression of tuberculosis has become almost universal. In England and on the Continent they have been far more enterprising than have we of the United States.

Germany has ninety sanitaria under government, State and private control.

Australia has forty-five sanitaria under government, State and private control.

In the United States the first sanitarium for tuberculosis was that established twenty years ago at Saranac Lake, N. Y., by Dr. Edward L. Trudeau. Since that time, and especially within the last ten years, a large number of private institutions have been erected, most of them in the North and West. The South is but poorly represented, even by private institutions. North Carolina has two, Alabama two, South Carolina one. *Georgia has none.*

Of government institutions there is the one for the army, at Fort Bayard, N. M. The Marine Hospital Sanitarium at Fort Stanton, N. M., and the Naval Camp at Pensacola, Fla.

STATE SANITARIA.

Massachusetts has a sanitarium accommodating four hundred patients, which has been in operation for nine years. New York has a large institution at Ray Brook, in the Adirondacks. Rhode Island and Maine have well equipped and large sanitaria erected within the past two years.

New Jersey has recently established a sanitarium, which is a model of its kind, as has Ohio and Minnesota.

Pennsylvania and Connecticut grant large annual appropriations to institutions of a charitable nature which

care for her poor consumptives. Maryland has appropriated moneys for a State institution to be located near Baltimore. Kentucky has recently appropriated funds for a State institution.

Illinois, Iowa, New Hampshire, Vermont and Wisconsin are alive to the necessity of the case, and in these States steps are being taken looking to the establishment of State sanitaria for tuberculosis.

Such widespread and fruitful interest can have but one meaning, that at last the vital need of such institutions is recognized.

THE DUTY OF THE STATE.

It has already been shown that the sanitarium method of treatment by far surpasses any other. *There is no specific medical treatment for tuberculosis.* The best results are obtained by proper hygiene and diet and attention to minute details, as each individual case demands, coupled with medication to meet the particular needs of the case. Such treatment can only be successfully carried out under the supervision of trained experts, and this supervision must be constant and unremitting.

The economic aspect is so well set forth in the report of the Wisconsin Commission that we quote this section entire:

"Merely as an economic problem, entirely independent of its humanitarian aspect, the State cannot afford to let 2,200 of its inhabitants die every year if a considerable number can be saved, while at the present time there are at least 9,000 of her citizens rapidly wasting away to an untimely grave. No disease makes such a drain on the resources of the family, for its long insidious course prevents the unfortunate victim from earning his daily bread, while at the same time the family is often

plunged into debt and actual want. The State must often take up the burden which the family can no longer carry, so that it must provide for the indigent as well as suffer the loss in aggregate wealth which its affected citizens are forced to bear. Next to insanity, tuberculosis throws a larger burden on the State than any other disease, in that many families are rendered dependent upon public charity to a greater or less extent by its ravages. The actual loss in working capacity of the affected individual when he happens to be the wage-earner can be quite readily computed as well as expenses incidental to the sickness itself, but the potential loss to the community at large is more difficult to ascertain. The aggregate, however, is enormous and unquestionably outranks manyfold any other disease from which mankind suffers. If we neglect for the moment the misery, worry, grief and suffering of the stricken patients, and those dependent upon them, would it not, from merely a financial viewpoint alone, be good statesmanship to check, at least in part, this drain on the productive capacity of the commonwealth which is measured in millions every year?

In two years alone the insurance companies of Germany spent $1,000,000 for the erection and maintenance of sanitaria in which to treat their consumptive policy-holders. This was done only after it was demonstrated good policy from merely a business point of view to heal as many of their stockholders as possible. If a business corporation finds it worth while to prolong the lives of its policy-holders, is it not worth while for the State itself to extend a helping hand to these unfortunates?

The national and State governments in our own country have spent hundreds of thousands of dollars for the restriction and eradication of this same disease in cattle, recognizing as a plain business proposition the desirability of holding in check the disease among our domesti-

cated stock. Is not human life worth as much as this, even in our commercial age?

The State provides for its other unfortunates, as is evinced by such noble and humane institutions as the asylums for the insane, homes for the feeble-minded, dependent children, etc. Adequate provision is made for these classes that are often a constant and a continual burden to the State until death brings relief. Can not the State do as much to help this class, which, in many cases, if aid is extended for even a short time (generally much less than one year), means restoration to health and activity?

Then, too, provision should be made for the consumptive because in his present helpless, ignorant condition, he is a continual menace to his family and the remainder of the community, endangering the lives of every one else, spreading misery, disease and death over all the land. Through the medium of the sanitarium the danger to the community is entirely removed, as well as continued reinfection of the case itself. It has been amply demonstrated that there is positively no danger whatever of a person contracting the disease in a properly conducted tuberculosis sanitarium. Dr. Trudeau, at Saranac Lake, reports that not a single case has ever been developed in nineteen years among the nurses and employees at the Adirondack institution."

HUMANITARIAN ASPECT.

In such a question as this we must not restrict ourselves to the sordid side alone. Above all else lies the duty of the State to do all that is in its power to succor its unfortunates who, through no fault of their own, have been afflicted with a malady that renders them unable, or at least unfit to pursue their avocation, and which, sooner

or later, makes them a burden upon their too often indigent friends or relatives, or upon public charity, when a helping hand at the proper time would set them upon the path of health and strength and self-support.

Nor must it be lost sight of that each sufferer from tuberculosis is a constant menace to those with whom he is brought in contact and to the community at large, unless he is trained to care for his sputum in the proper way. If it is the duty of the State to prevent the spread of smallpox and yellow fever and typhus, it is certainly no less a duty to prevent, as far as possible, the spread of tuberculosis that kills more people than all of these and other contagious diseases combined.

THE SANITARIUM AS AN EDUCATIONAL FACTOR.

It may be argued that it is quite impossible for the State to care for even a comparatively small number of its consumptives, and this is true. But no one can, with reason, assert that the State is therefore not obligated to do its utmost towards suppression of contagious diseases of whatever nature. One of the most important functions of the sanitarium, if not quite the most important, is the educational influence that such an institution exerts.

It has been the experience in sanitaria for this disease that the average duration of treatment is six months. An institution capable of accommodating one hundred patients would, therefore, send back to their respective communities each year at least one hundred and fifty trained missionaries, each one of whom would by example and word of mouth preach the gospel of hope and health and proper method of living in his sphere.

The war cry of the crusaders in the fight against the white plague is *education*. Until our people learn what tuberculosis is, that it is a *communicable* disease, and

therefore a *preventable* disease, and that taken in time and treated in the right way, a *curable* disease, it will continue to claim its victims. One sanitarium trained patient, a living witness of what may be accomplished by proper means, is worth as much to a community as a free library.

RECOMMENDATION THAT A STATE SANITARIUM FOR TUBERCULOSIS BE ESTABLISHED.

In view of the facts presented, your committee have to recommend that a sum of money be appropriated for the purpose of purchasing a site, erecting building, and for maintenance of a State sanitarium for tuberculosis.

CONSIDERATIONS RELATIVE TO PROPOSED SANITARIUM.

Your committee have carefully investigated the various questions relating to sanitaria for tuberculosis in every way available. We have been in correspondence with the heads of several of the larger institutions and have personally visited and thoroughly inspected the more important ones in the East.

Because of the consideration and study that we have given the matter we deem it expedient to make certain recommendations, as follows:

The question of location is of great importance, and should be most carefully considered in order to obtain, if possible, a happy combination of those conditions that will be most conducive to success, and to avoid those errors which have been made by others.

General Accessibility.—One of the chief necessities is that the institution shall be readily accessible from all parts of the State, and that it shall be near enough to a trunk line to facilitate transportation of supplies of all kinds and minimize the cost of freight and fares.

It is the universal verdict that such an institution should not to be too remote from a large center, but it is highly desirable that it be sufficiently removed from any large town to secure an atmosphere free from dust and smoke.

Altitude.—In former times it was considered necessary for the consumptive to seek a high altitude, but more recently it has been shown that a moderate elevation is the more desirable for most cases.

An altitude of about one thousand to fifteen hundred feet is quite sufficient to insure freedom from humidity, provided the institution is located upon an elevation above the country that immediately surrounds it.

Local Conditions.—A rolling, or slightly hilly country should be selected. This is true for several reasons, first of which is that good drainage is of importance, and this can only be secured where there is considerable fall. The surface drainage is much better where the soil is sandy or gravelly, and clay soils should be avoided on account of their property of retaining moisture. The surroundings of such an institution should be as attractive as possible, and a cheerful and picturesque outlook is more conducive to good spirits in the patient than the dreary monotony presented by a flat region.

It has not been possible for your committee to sufficiently investigate the various locations to be in a position to definitely recommend any especial site.

We would, therefore, recommend that this question be placed in the hands of the board of trustees that must be appointed to supervise the affairs of the institution, should its creation be decided upon.

Water Power.—It is highly recommended that if possible, a site be selected upon which there is a stream of water with sufficient fall to develop water power for use in the sanitarium. Such power would greatly reduce the cost of maintenance in that by use of electricity the light-

ing, much of the cooking, heating of laundry apparatus, and perhaps even hauling of supplies from the railroad, would be possible at small expense. With the rapid improvements that are being made in all electric appliances a considerable water power could not fail to be of the greatest service.

Amount of Land.—A tract of land of several hundred acres should be selected. Many of the existing institutions now deplore the fact that too small an area was first secured, and now find it impossible to add to the original purchase on account of increased prices of surrounding territory.

Besides the space required for the location of buildings, and the immediate grounds, there should be a sufficient amount of good farming land upon which might be raised all of the truck and cattle and horse feed necessary for the institution.

Dairy Herd.—As good milk in quantity is one of the chief and necessary articles of diet, provision should be made for a dairy herd sufficient to meet the needs of the institution.

This could be gradually developed, provided pasturage was available, and would materially reduce the cost of maintenance. The sanitarium should thus be able to furnish itself with all of the necessary milk and butter.

Chicken Ranch.—As soon as possible a chicken farm should be inaugurated for the purpose of supplying the institution with eggs and chickens. This would also be of great value, in that patients who were able to work could be trained in an industry that would furnish them with an easy method of gaining a livelihood after their discharge, and which, being an outdoor occupation, would be conducive to their continued health.

A practical trained expert should be in charge of this department.

Water Supply.—A plentiful supply of good water must be available for drinking and other purposes, and if this could be supplied by piping from higher ground, cost of pumping station would be saved.

Buildings.—In general, the buildings should follow a simple form of architecture. We consider it a great mistake to erect expensive structures of pretentious proportions, because in our climate they are unnecessary, and the money may be better expended and provision made for a greater number of patients with a given amount of funds. It will be necessary to have an administration building in which should be grouped the officers' quarters, examination rooms, laboratory, reception room and nurses' quarters, with perhaps an infirmary and operating room. A congregate dining-room may be included in this building, or may be separately constructed.

A general heating plant and kitchen may be grouped in another building in which the laundry should also be located.

"Lean-to's" and "Shacks."—For the accommodation of patients only the simplest form of building is necessary. Out-of-door life is one of the essentials of successful treatment, and we would again stress the folly of expensive buildings for the housing of patients. The "lean-to," such as is in use at Loomis Sanitarium, New York, and the simple "shack," which has been developed at White Haven Sanitarium, Pennsylvania, are peculiarly adapted to our needs and present the most simple and inexpensive form of building, while they are admirably adapted to the treatment of the disease.

Tents, which have been extensively used by some institutions, have been found more expensive and not so well adapted for the purpose as the more simple wooden structure just mentioned.

General Policy.—We are of the opinion that it should be the policy to begin on a comparatively small scale with a view to increasing the scope of the institution at such a rate as time and experience shall prove expedient.

The first requisite is a proper location and a sufficient amount of land to allow of expansion if it is demonstrated that this is desirable. It might be possible to convert buildings already existing so that they would in a measure answer present needs.

CLASS OF PATIENTS TO BE ADMITTED.

We can not too strongly urge that only persons who are suffering from the disease in its very earliest stage be admitted. A large per cent. of such cases are curable, and in an institution which must necessarily be limited to caring for a comparatively small number, it would be manifestly unwise to accept any case in which there was not a reasonable certainty of permanent benefit.

Every advanced case admitted would exclude a more favorable one. It should be the aim of the institution to accept only those who would be quickly benefited and move on that other unfortunates might receive the care and training that would save them to their families and the State.

In closing this report your committee wish to acknowledge with thanks the many courtesies they have received at the hands of the heads of the various sanitaria visited by them, as well as from the staffs of these institutions, and the gentlemen with whom they have corresponded.

The visits made to the sanitaria have been a revelation and an inspiration as well, for they have shown us what can be done, what our own sister States are doing, and what we should do.

It is high time that this great Empire State of the

South should no longer be inactive while her children die by thousands of the Great White Plague, which is

COMMUNICABLE.
PREVENTABLE,
CURABLE.

Dr Jones moved that the report be adopted; that five hundred copies of the same be printed for distribution, and that the bill mentioned in the report be referred to the Committee on Public Policy and Legislation for presentation to the next Legislature, as recommended in the report.

Seconded by Dr. Claude A. Smith and carried.

Dr. R. R. Kime presented the report of the Committee on Education, as follows:

REPORT OF COMMITTEE ON EDUCATION OF THE MEDICAL ASSOCIATION OF GEORGIA.

In trying to prosecute our work, we find that in order to reach the public schools of the State we will have to correspond not only with the State School Board, but with the various school boards throughout the State, which will require considerable postage and some printing of circulars. In order to do this the committee requests the Association to appropriate fifty dollars ($50.00) to defray expenses of the committee for postage and printing for the use of the committee.

We are devising plans by which it is hoped to secure instruction in the public schools on the subject of contagious diseases, especially tuberculosis, as to the cause and prevention. In order to facilitate our work we desire the Association to pass the following resolutions:

1. That the Medical Association of Georgia recommends the giving of instruction in the public schools of

the State on the cause and prevention of contagious diseases, especially tuberculosis, in such form and language as pupils of the seventh and eighth grades can readily comprehend and understand.

2. The Association also recommends the preparation of a pamphlet embodying such instruction which shall be studied by the teachers and be used in imparting instruction to pupils.

The committee also desires the Association to endorse the establishment of a State Commission for the study and investigation of crime, pauperism, insanity and mental degeneracy, as we believe such a commission would be in the interest of the State for the better development of the people, with a view to securing a more harmonious relation of the races and lessening crime, vice and disease. The recommendation for the commission is:

Resolved, first. That we endorse and urge the Legislature of the State of Georgia to provide for the appointment and maintenance of a commission for the study and investigation of the primal causes of crime, pauperism, insanity and mental degeneracy.

Second. Said commission to be composed of two physicians, two lawyers, two ministers and two teachers selected because of their fitness and qualification for the work.

Third. It shall be the duty of this commission to study the above subjects from a scientific and practical standpoint, as they pertain to the State and this section of the country in relation to both white and colored races, and make annual reports of their work, including suggestion as to the control and prevention of these evils.

Fourth. We urge the appropriation of at least $5,000 by the Legislature and so much annually as may be needed for the use of the commission, that it may accomplish its work in an efficient manner, and disseminate such

knowledge as will be of benefit to the various professions and general public of the State.

The establishment of this commission has been recommended by the Fifth District Medical Society, Fulton County Medical Society and Atlanta Sociological Society; also by numerous physicians throughout the State.

We further desire the Association to endorse and recommend the establishment of a State colony for epileptics, and an industrial school for the feeble-minded.

We suggest for approval that the Medical Association of Georgia hold night sessions during each annual meeting on the first and second nights, devoted to papers and discussions on educational and sociological subjects, to which the general public shall be invited.

Respectfully submitted,

R. R. KIME,
E. R. CORSON,
DUNBAR ROY,
THEODORE TOEPEL,
Committee.

Dr. C. M. Curtis moved that the report be adopted, as read. Seconded.

After some discussion, it was moved to amend that the first night instead of the first and second nights be set aside for the consideration of such subjects as mentioned in the report of the committee. Seconded.

Dr. M. A. Clark moved as a substitute that the entire report be adopted, with the exception of that clause which refers to certain evenings being set aside for the discussion of educational and sociological subjects. Seconded.

The President put the substitute, and it was carried.

Dr. C. M. Curtis moved that a committee of three be appointed to assist the committee on public policy and

legislation in the establishment of a State colony for epileptics, etc. Seconded.

After discussion, this motion was laid on the table.

The secretary presented his annual report.

The Association now has ninety two organizations, comprising 100 counties with 1,200 paid members.

FINANCIAL STATEMENT.

1906.			
April 17.	Balance in bank	$ 3,280	29
	Dues collected	3,602	32
		$ 6,882	61

EXPENSES.

1906.			
April 25.	M. A. Clark, Councilor	$ 68	38
	W. B. Hardman, Councilor	47	42
	R. E. L. Barnum, Councilor	41	64
	W. L. Davis, Councilor	68	80
	A. T. Calhoun, Councilor	29	15
	J. C. Bloomfield, Councilor	17	94
	J. D. Herrman, Councilor	36	20
	W. L. Pilcher, Councilor	50	65
	W. L. Fitts, Councilor	65	71
April 27.	T. E. Sheffield	5	15
May 3.	F. C. Robinson & Co	5	00
	W. O. Tarver	10	00
	E. C. Davis	30	00
	Southern Express Co	2	25
June 8.	Wm. Whitford	169	55
11.	Franklin Printing Co	70	50
	J. P. Stevens	13	40
28.	R. L. Polk & Co	6	00
Aug. 22.	Lester Book Co	7	30

Oct.	10.	Franklin Printing Co	1,197 03
Dec.	10.	Franklin Printing Co	4 75
1907.			
Mch.	2.	J. F. Cole, Secretary	4 00
	7.	Rubber stamp	1 00
		500 Constitutions	3 00
	23.	W. S. Ansley, Secretary	3 00
April	15.	Franklin-Turner Co	47 25
		H. W. Harris, Secretary	2 00
		L. H. Jones, salary as Secretary...	1,000 00
		Stamps, exchange, postals, etc....	115 45
			$3,122 52
		To balance	3,760 09
			$6,882 61

On motion, the report was accepted and adopted.

On motion of the Secretary, the following bills were referred to the Committee on Public Policy and Legislation:

(1) Substitute bill for those of Senators Adams and Bloodworth.

(2) A bill in reference to the sale of poisons and other drugs by providing regulations for the sale of narcotic drugs, and in the sale of patent and proprietary medicines, and for other purposes.

(3) An Act providing for the enforcement of the laws of the State of Georgia regulating the inspection and sale of poisons, proprietary medicines, or drugs, and to appropriate money for that purpose.

Dr. M. A. Clark reported in behalf of the Council that the Council had examined the books of the Treasurer and had found them correct, with a balance on hand of $3,620.40.

On motion, this part of the report was adopted.

Regarding the bill of Dr. Westmoreland as chairman of the committee on the Crawford W. Long fund, the Council could find no authority for approving that bill, so they had refused to aprove it, and desired to leave the matter with the House of Delegates for action.

After many questions were asked regarding how this bill was incurred, it was moved and seconded that the action of the Council be concurred in. Carried.

Dr. L. G. Hardman asked for a ruling by the chair as to whether or not there was still a Long memorial committee.

The chair ruled that inasmuch as such a committee was appointed some five years ago, there was no record that it had been discharged. The committee, however, had no authority to incur debts.

The Council further recommended that the scientific work be not divided into sections.

On motion of Dr. Curtis, this part of the report of the Council was adopted.

The Council called attention to the use of physician's names in the daily press, which is contrary to the dignity of the profession, and not in keeping with medical ethics, and the owning of stock and lending of interest to patent and proprietary medicines are wrong, and we condemn the same.

On motion of Dr. Howard J. Williams, this part of the report was adopted.

It was then moved and seconded that the report of the Council be adopted as a whole. Carried.

Dr. Michael Hoke moved that the President be allowed an amount not to exceed $150 for railroad expenses in traveling over the State in the interests of the Association; and that the expenses incurred by President Martin in the last year be paid.

Seconded and carried.

Dr. Armstrong offered an amendment to the Constitution to change the time of meeting of the Association from third Wednesday in April to first Wednesday in May.

Dr. Michael Hoke moved that a committee be appointed by the President to look into the advisability of publishing a journal of the Medical Association of Georgia instead of the volume of Transactions, and that this committee be instructed to report at the next meeting of the House of Delegates.

Seconded and carried.

The President called attention to two recommendations in his address, one in reference to the crime of abortion.

Dr. Howard J. Williams moved that the Committee on Public Policy and Legislation be instructed to secure the enactment of a law or laws that will provide specific punishment for the crime of abortion.

Seconded and carried.

The President said the other recommendation to which he would like to call attention is that a committee be appointed by the Association to aid in securing the cooperation of all of the county societies with regard to a minimum fee of $5.00 for insurance examination.

It was moved and seconded that such a committee be appointed. Carried.

Dr. Clark moved that the Association felicitate the Chatham County Medical Society on the cordial reception they have given us, and extend to them our heartfelt thanks; also that our thanks be extended to the President for the interest he has taken in the work and in the manner in which he has presided over the sessions of the Association by rising vote. Seconded and unanimously carried.

Dr. L. G. Hardman moved that a committee of three

be appointed by the President to investigate and determine what stationery and postage the different committees actually need, and to report back to the House of Delegates at the next annual meeting. Seconded and carried.

Dr. Armstrong moved that the Association offer a small prize of say $25.00 or more for the best scientific work presented to the Association at each annual meeting, and that a committee of three be appointed to decide on the best paper presented. Seconded.

It was moved to amend that the Committee on Scientific work be instructed to offer a prize for the best exhibition of scientific work at the next meeting.

The motion was seconded, and the original motion as amended was carried.

There being no further business to come before the meeting, the House of Delegates, on motion, then adjourned *sine die*.

MINUTES ON SECTION OF MEDICINE.

The Section met at 11 a.m., April 17, 1907, and was called to order by the Chairman, Dr. A. P. Taylor, Thomasville.

Dr. Thomas J. McArthur, of Cordele, read a paper entitled "Enterocolitis in Children."

This paper was discussed by Drs. Crawford, Williams, Kime, Williams (W. P.), Boman, Visanska, and in closing by the essayist.

Dr. Wesley Taylor, of Atlanta, read a paper entitled "Training of Epileptic and Feeble-minded Children," which was discussed by Drs. Allen, Kime, Coleman, and in closing by the essayist.

Dr. Robert V. Martin, of Savannah, read a paper on "Diphtheria and Its Treatment."

Dr. J. A. Combs, of Locust Grove, read a paper on "The Soda Fountain and Its Attendant Evils."

Dr. James H. Crawford, of Martin, followed with a paper on "Broncho-Pneumonia," after which the section, on motion, adjourned until 3 o'clock.

SECOND SESSION.

The Section reconvened at 3.30 p.m., with Dr. Taylor in the chair.

Dr. J. A. Crowther, of Savannah, read a paper on "Tetanus."

This was discussed by Drs. Jarrell and Taylor.

Dr. T. E. Oertel, of Augusta, reported "A Case of Vincent's Angina," which was discussed by Dr. Crawford, and in closing by the essayist.

Dr. W. P. Williams, of Blackshear, presented a "Report of Fifty Dwellings Infected with Typhoid Fever."

Dr. A. R. Scott, of McDonough, read a paper on "The Treatment of Typhoid Fever."

These two papers were discussed jointly by Drs. Williams, McHatton, Crawford, and in closing by the authors of the papers.

Dr. W. Herbert Adams, of Savannah, read a paper on "Paranoia."

This paper was discussed by Dr. Graham, and in closing by the essayist.

Dr. St. John B. Graham, of Savannah, read a paper entitled "Irren." He also demonstrated a method of iodine medication.

Dr. S. A. Visanska, of Atlanta, read a paper entitled "A Few Practical Points in Infant Feeding."

This paper was discussed by Drs. McHatton, Graham, and in closing by the essayist.

On motion, the Section adjourned until 10 a.m., Thursday.

THIRD SESSION.

The Section met at 11 a.m., Thursday, and was called to order by Chairman Taylor.

Dr. L. C. Roughlin, of Atlanta, read a paper on "Some Abdominal Pains."

Dr. M. M. Saliba, of Savannah, read a paper on "Cough and Its Treatment in Consumption."

Dr. J. E. Sommerfield, of Atlanta, read a paper on "Home Treatment of Tuberculosis."

These two papers were discussed together by Drs. Slack, Johnson, Harrold, Cunningham, McArthur, L. G. Hardman, Curtis, Oliveros, Williams, Cunningham, and the discussion closed by Dr. Saliba.

Dr. P. Oliveros, of Savannah, read a paper on "Auto-Intoxication, and Its Relation to Neurasthenia."

Dr. Theodore Toepel, of Atlanta, followed with a paper entitled "The Doctor in Relation to Exercise as a Factor in Medicine and Surgery."

Dr. C. C. Harrold, of Macon, showed an interesting case for diagnosis (author will furnish written report).

Dr. H. F. Harris, of Atlanta, read a paper on "Tropical Aphtha or Sprue in Georgia."

This paper was discussed by Drs. Slack, Cunningham, Lamar, Walker, Vaughan, Lattimore, and in closing by the essayist.

Adjourned.

FOURTH SESSION.

The Section met at 11.30 a.m., Friday, with Dr. Taylor in the chair.

Dr. Henry R. Slack, of LaGrange, read a paper on "Methylen Blue in the Treatment of Cancer."

Discussed by Drs. Bryant, Combs, McArthur, Underwood, and in closing by Dr. Slack.

Dr. C. R. Andrews and Dr. Michael Hoke, of Atlanta, presented a joint paper entitled "A Preliminary Report on the Relation of Albuminous Putrefaction in the Intestines to Arthritis Deformans (Rheumatoid Arthritis, Osteo-Arthritis): Its Influence Upon Treatment."

The paper was discussed by Drs. Harrold, Armstrong, Hoke, and the discussion closed by Dr. Andrews.

Dr. Ralston Lattimore, of Savannah, read a paper entitled "Blood Pressure in Health and Disease," which was discussed by Dr. Graham.

Dr. Claude A. Smith, of Atlanta, read a paper entitled "The Germ Which Produces Inflammation of the Middle Ear in Atlanta."

Dr. Kime moved that all papers, whose authors are present and are prepared to read them, but can not do so on account of lack of time, be read by title and published in the Transactions. Seconded and carried.

On motion, the Section then adjourned *sine die.*

PRESIDENT'S ADDRESS.

BY H. H. MARTIN, M.D., SAVANNAH.

It is not on record that there was a physician in the Garden of Eden, nor that one survived the deluge. But certain it is that our profession is an ancient and honorable institution. Ancient because of its early appearance in the history of the world (both sacred and profane). Honorable because of its unselfish devotion to humanity at large, a devotion that is unparalleled by any other profession or trade, for its ultimate result can be only self-extinction.

When we have at last succeeded in establishing and maintaining the condition of public health for which we are striving, we will become extinct. But it is so manifestly right and proper that we should continue in this course even to the point of self-extinction that I therefore pass it without further comment.

The "Medicine of the Bible" has been the subject of several learned essays. In the Book of Genesis is found the statement that "Joseph commanded the physicians to embalm the body of his father, Israel."

And in the Bible is also found the following grim joke: "King Asa in his disease sought not to the Lord but to the physicians. And Asa slept with his fathers."

But it does not appear that medicine was regularly studied by the Jews at this period nor that the Science of Medicine owes anything to this nation until after the rise of the Alexandrian School. But the Egyptians had a treatise on anatomy as early as the year 5240 B. C. The earliest allusions to medicine or surgery in Greek literature

are found in the writings attributed to Homer, about 1000 B.C., where Æsculapius is mentioned as a well-known and distinguished physician. In the fifth and sixth centuries B. C. there were in Greece between fifty and sixty temples of Æsculapius, some of which became famous, and their schools occupy a prominent place in the history of medicine. In the vicinity of these temples numbers of physicians collected and formed an association or brotherhood, the members of which claimed to be descendants of Æsculapius either direct or by adoption. That medicine was hereditary we know from the Hippocratic oath and from the genealogies of many of the celebrated physicians of Greece. This custom to some extent obtains at the present time. On one of the slopes of Pindus there are still five or six villages the inhabitants of which are supposed to be born physicians and surgeons, each family having its own specialty and inherited traditions. We can assume, therefore, that the first medical association was organized about 500 B. C. But the organizations have not kept pace in practical efficiency with the advancement of the science itself. It is only in recent years that medical men have recognized the material advantages arising from an organization such as this one now is.

There were some among us who doubted the wisdom of adopting our present Constitution and By-laws, and who fought valiantly in defense of their honest convictions. But a review of our work during the past two years proves beyond doubt the wisdom of that course and emphasizes the necessity for further efforts in that line. While our membership has increased from six hundred to about fifteen hundred, and our influence is beginning to be felt in the remotest confines of our State, much remains to be done. The plan of reorganization as adopted by this Association contemplates the organization of an efficient medical society in every county in the State so far as prac-

ticable and the organization of district societies in each Congressional district as well. These plans are being carried out in a very satisfactory manner under the direction of your councilors. Following out this same idea in a larger sense there was organized in Chattanooga by representatives from the State Medical Societies of Georgia, Florida, Alabama, Tennessee, Mississippi and Louisiana, last October, a medical association whose membership is limited to members of the State societies in these six States, having for its object a closer affiliation of the medical men of the South, the advancement of our scientific work to the highest possible standard and, standing as it does, a connecting link between the State Association and the American Medical Association, being closely affiliated with both but exercising no legislative function whatever. It is in the strictest sense a purely scientific body. This movement has been endorsed by our Association, and I recommend that as many of you as care to join it give your names to the councilor for Georgia (Dr. Michael Hoke) at this meeting. The material advantages to be derived from an organization such as ours are of two kinds: the first is of course the opportunity it gives us for the presentation and discussion of purely scientific matters; the second is the opportunity it gives us to combine our forces for the correction of many existing evils, the greatest of which is that unholy gang of vampires who are daily sucking the blood of the poor and afflicted, debauching them mentally and physically with their alcoholic and narcotic nostrums and morally with their filthy advertisements. I refer to quacks, charlatans, advertising specialists and venders of patent medicines and so-called proprietary medicines (which is a distinction without a difference). The recent pure food enactments of the national government and of our own State legislature are long strides in the right direction, but they are not yet

broad enough in their scope and do not touch the advertising specialist, the osteopaths and various other paths.

Mr. Edward Creel, of the Kansas City *Independent,* in a strong editorial on this subject, says: "The root of the evil lies with the newspapers. Ninety-five per cent. of the earning power of these fakirs and frauds lies in newspaper advertising. Ninety-nine out of every hundred patent medicines and advertising doctors are lies and cheats. A newspaper proprietor is just as responsible for the advertisements that go into his paper as he is for any article in the news column. A law that would make the newspaper owner civilly and criminally responsible for the advertisements in his paper would come close to solving the fake doctor problem." That strikes directly at the root of the matter so far as patent medicines and quacks are concerned. But we need also a State law similar to one which has been presented to the New York State Legislature for the regulation of the so-called "paths," a law which accurately defines the practice of medicine and provides for a single examining board, before which all who desire to practice the healing art must come and pass a common examination, eliminating entirely the subject of practice, assuming that all who have the other necessary qualifications will be able to practice intelligently the method indicated in the cases they meet.

As to the so-called proprietary drugs, Mr. Edward Bok, of the *Ladies' Home Journal,* says that in his fight against these great evils he has had the "cooperation of all classes of the public except physicians," and that he finds "the physician in direct cooperation with the patent-medicine curse." He says: "Look at your average medical journal, reeking with advertisements of proprietary (so-called ethical) preparations. And not only advertisements but reading notices calculated to deceive."

He says further that as a result of his investigations:

"The evidence of the unintelligent prescribing of secret proprietary medicines on the part of physicians is appalling," and that "the prescribing of those preparations is increasing to an alarming extent."

Dr. Jacobi reports that in twenty-five years the percentage has increased from one in fifteen hundred to twenty or twenty-five per cent. of all prescriptions and that in a single New York drug-store investigation showed that seventy per cent. of the prescriptions sent in by reputable physicians contained either nostrums pure and simple or as a part of a compound. Dr. Billings reports that in Chicago one drug-store showed forty-two per cent. of its prescriptions to be for proprietary medicines and another fifty per cent. Boston showed thirty-eight and forty per cent.; Philadelphia an average of forty-seven per cent. Truly a sad commentary, gentlemen, on the practice of medicine. Is it any wonder that surgery has outstripped medicine in their struggle to become exact sciences?

Mr. Bok is considerate enough to speak of this as "a thoughtless practice." That to my mind is too mild a term. Criminal practice better suits the case. The remedy lies in your hands. Simply exclude the glib, persuasive distributor of samples from your office, throw his samples in your waste-basket, and limit your prescriptions to recognized pharmaceutical products. The Council on Pharmacy and Chemistry of the American Medical Association is doing excellent work in exposing frauds and publishing formulæ or worthy preparations, and there is absolutely no excuse for prescribing any others. Let us get together, gentlemen, on this question, and the doom of the proprietary nostrum is sealed. Eternal vigilance is the price of safety, and the Proprietary Association will not give up easily. But give up they must if we present a united front in this just and honorable fight.

A word as to osteopaths before leaving this subject.

The osteopaths first gained a footing in the several States under the subterfuge that they were not physicians within the meaning of the law; that they did not treat disease in such a way or by such methods as to bring them within the purview of the law. And now we find that an osteopathic bill was surreptitiously carried through the United States Senate by Senator Foraker at its last session and is now pending in the Committee on the District of Columbia of the House, which bill provides for a board of examiners in the District of Columbia composed entirely of osteopaths, who shall examine all persons desiring to practice osteopathy; all questions propounded except such as relate specifically to the treatment of diseases being the same as the questions to applicants to practice medicine. But mark you! the questions are to be asked and the answers passed upon, not by qualified physicians, but by osteopaths.

This bill, considered judiciously as it may be, can only be construed as an effort on the part of persons deficient in fundamental qualifications to acquire the right to treat disease and assume responsibilities for which they are totally unfit. And there is abundant evidence that the same or a similar bill is being simultaneously presented to any number of State legislatures and it behooves us to be strictly on guard for such movement in this State.

There is another great evil in our midst, gentlemen, that is not only a blot on the face of our body politic, but is a direct reflection on our profession. I refer to the crime of abortion. The laws of Georgia provide no punishment for this revolting crime unless you can convict the offender on the charge of murder—an exceedingly difficult thing to do—and as a matter of fact it is extremely difficult to secure conviction in any case. As a result, in one of our cities there is an institution devoted

to this practice that openly advertises in the daily papers. I deem it the duty of this Association to secure the enactment of laws that will not only make conviction easier but punishment sure and of a character to fit the crime.

I recommend further that this Association indorse and aid the movement to establish a State sanitarium for the isolation and treatment of tuberculosis, and that we lend our aid in securing a larger appropriation for the State Board of Health.

And now a word as to ourselves and our affairs. Our Association is in splendid shape and its future is assured. It has become a power to be used with discretion, but to be used. At our last meeting a resolution was passed favoring a minimum fee of five dollars for life insurance examinations. Since that time a number of County Societies in the State have entered into a signed agreement to that effect, and while a few insurance companies have made a desperate effort to break that agreement they have met with little success, and to my mind the fight is practically won. I am informed that eighteen State Medical Associations have passed similar resolutions and that more than half of the County Societies in the United States are cooperating. But you can readily understand the necessity for unanimous action on the part of the County Societies. I therefore recommend that there be a committee appointed from this Association whose duties shall be the securing of the cooperation of the remaining counties in this State, and the strengthening of the compacts already entered into.

Another very great injustice to medical men in Georgia is the special tax of ten dollars per year which is levied on the doctor for the privilege of practicing his professsion. There is neither reason nor justification for this tax, and a concerted move on the part of this Association will abolish it. Every one of its fifteen hundred members

has a speaking acquaintance with one or more of our legislators, and if our legislative committee should draft and present a bill abolishing the tax we would experience little trouble in securing its passage. Aside from exploiting the material advantages to be derived from this Association the present officers have endeavored to elevate its scientific work to the highest possible standard, and in so doing have deemed it advisable that this work be divided into appropriate sections, with a chairman and secretary for each. This plan was submitted to the Board of Council and the House of Delegates and met with their entire approval, and I recommend its continuance; in fact, we have grown so large that it has become a necessity. I recommend also the establishment by this Association of an official journal. At present there is but one medical journal published in Georgia, and it seems that the times are propitious for the launching of an official organ of this Association.

I can not close this address, gentlemen, without some expression of my appreciation of the great honor you have conferred upon me. The honor of having been the official head of the medical profession in this great State is one of which any man may be proud, no matter to what height he may have attained in his profession.

ENTEROCOLITIS IN CHILDREN.

BY THOS. J. M'ARTHUR, M.D., CORDELE.

When we consider how many little lives are destroyed by this disease we can realize something of the importance of this subject. In some of the large cities statistics show that thirty-three per cent. of the deaths from all causes is due to diarrheal affections, and of these deaths ninety-five per cent. occurs in children less than five years old, ninety-two per cent. in children less than two years old, and sixty-seven per cent. in children less than one year old. A disease with such mortality, and which claims for its victims such a large number of innocent, helpless children should receive no small amount of consideration from the medical profession.

ETIOLOGY.

The most frequent causes of this disease are cold and improper feeding. Infants insufficiently protected by clothing and exposed to sudden changes of temperature or to currents of air, or exposed outdoors by careless nurses, frequently become affected with diarrhea from taking cold, just as other children contract coryza or bronchitis from the same cause. But the most frequent cause of this disease is improper feeding, the use of food which is unsuitable for infantile digestion, and which therefore acts as an irritant. Then, too, the food may be of good quality, but improperly administered, being given too frequently or in too great quantity, and as a consequence is not all digested. This undigested food in consequence of fermentative change stimulates the intestinal

follicles to excessive secretion, and increases the peristaltic movements by its irritating action, thus producing frequent and unhealthy evacuations. The experiments of Booker & Vaughn have given us strong evidence that bacteria are the chief casual agents of those forms of diarrhea which originate from foul air and unwholesome and indigestible food. These toxines occasion the most profound disturbances, and the invasion of other organs is not unusual. Under the influence of this intoxication from the intestinal tract the resistance of the whole organism is diminished, as is manifested by numerous complications. It is the experience of every physician that the number of cases of severe diarrhea or enterocolitis is small among breast-fed children, but in children who are artificially fed we find a great many cases. Holt emphasizes this when he says that of 1,943 fatal cases of which he has collected the records, only three per cent. was breast-fed exclusively. The season plays an important part in this disease. We see very few cases in the winter, but when warm weather appears it becomes frequent and acquires considerable prominence, owing to its severity and large mortality. This is evidenced by the statistics of all cities in temperate climates. Cases become more and more numerous and severe as the weather grows warmer, until July and August, when it obtains its maximum prevalence and severity. In these two months it is the most frequent and fatal of all diseases in cities. In September it is not so frequent and new cases are not so numerous. The fact is therefore undisputed, and is universally admitted, that this is a disease of the summer season. It is much more prevalent in cities than in rural districts for the reason that a greater number of city children are artificially fed, the air has more impurities which lowers the vitality of the child and pure milk is more difficult to obtain.

SYMPTOMS.

The onset is usually gradual. The child is dull and languid, or is irritable, and there is a slight rise in temperature. Nourishment is either refused or taken in small quantity. There may or may not be nausea and vomiting with flatulence and colic, which usually disappears after the first copious liquid stool. The colic and pain return, however, upon the administration of more indigestible food, and the diarrhea becomes more and more profound. The color of the discharge is at first normal, but they gradually change to a rice-waterlike fluid, without odor. A return to a darker color with odor to the feces may be looked upon as a favorable sign. There is a great thirst, and while the diarrhea is severe, the child will drink eagerly of cold water or any liquid, but when the diarrhea ceases, it refuses water and will return to the breast or bottle as formerly. At the beginning of the attack there is usually some fever, but when the diarrhea becomes profuse the fever subsides, extremities become cold, lips pale and bluish and the features are pinched. But after the diarrhea is checked the fever returns, and when this reactionary fever is of short duration, a rapid recovery will ensue. On the other hand, if the fever lasts long, recovery will be retarded and there will be rapid emaciation and atrophy. At first the stools are liquid, but later contains mucous which is sometimes streaked with blood. There may be great tenesmus, especially if the lower portion of the colon is involved. Protracted diarrhea frequently causes erythema over the perineum and sometimes as far as the thighs, due to irritation from the acid stools. Vomiting is a very distressing symptom, if the gastric mucous membrane is involved, and the patient loses strength very rapidly owing to failure to retain sufficient nourishment and to the lack of rest. Bronchitis is

a frequent complication of enterocolitis, and sometimes gives us considerable trouble. When these little patients have been sick for sometime, become weak and have been constantly in the recumbent posture, hypostatic congestion of the lungs results from lack of heart force and feeble pulmonary circulation. This congestion, continuing, soon results in pneumonia of a low grade, which is a serious complication. Another serious complication, which is likely to occur when the loss of flesh and strength have continued for several weeks is spurious hydrocephalus, which is announced by drowsiness or vomiting and rolling of head. This, if mild, may be recovered from by stimulation, but if it is profound the usual result is death. In cases of moderate severity the duration of acute symptoms is usually about a week, and after this recovery may be slow and relapses frequent in cases previously in good condition and properly treated. In those cases which are more severe or in which relapses have been frequent, convalescence is slow and it may be months before the child fully recovers, indeed, the child may never regain its former vigor.

PROGNOSIS.

The prognosis is not good in infants and in those children whose power of resistance has been diminished by former illness, and when complicated with broncho-pneumonia or hydrocephalous. Cases which occur in the summer are in danger of relapses or recurrent attacks until cool weather appears. Persistent vomiting, continued high temperature, rapid wasting, nervousness and rapid pulse are some of the serious symptoms. Simple cases, unless the patient is weak to begin with, need not be regarded as very serious if the proper treatment is given in time. The danger lies in neglect and injudicious feeding.

PROPHYLAXIS.

The old adage that an ounce of prevention is worth a pound of cure is very applicable to this disease. In the first place we should encourage all mothers to nurse their children from the breast; do it at regular intervals, and not form a habit of nursing to quiet when fretful. We should caution them not to begin feeding too soon. Overfeeding especially is to be avoided. Proper regard must be had for clothing. Young children should wear flannel next to the body throughout all seasons until childhood is well established. This flannel should fit snugly around the chest and abdomen. The nurse should avoid exposing it to drafts or sudden changes in temperature, yet it should have plenty of outdoor air. We must look carefully after the hygienic surroundings of children, and see that they get their regular morning baths. Care should be taken to see that all napkins, especially if diarrhea be present, are immediately removed and either washed out promptly or thrown into a disinfectant solution. If the child is artificially fed care should be exercised in the choice of food. I think that all are agreed that modified cows' milk is the best substitute for mothers' milk if it can be secured pure and of good quality. It is important that the cow be kept in good quarters with proper regard for sanitary surroundings, and all vessels, utensils, bottles and nipples should be kept cleaned, and after being used must be thoroughly cleaned, boiled and aired. While most cases of enterocolitis are found in artificially-fed children it is well to remember that it is not artificial feeding per se, but artificial feeding ignorantly and improperly done, that is to blame. When I know that the milk is not contaminated, as we can in the country and small towns, I prefer to use it without sterilizing or pasteurizing, because it is more palatable and

more easily digested. However, if there is some doubt as to the purity of the milk I would prefer pasteurizing. In no case do I give milk alone, but diluted with sterile water. The following formula by Holt is a good one: Milk sugar, one ounce; lime water, one ounce; top milk, two ounces; sterile water, q. s. twenty ounces. This for an infant; in a few weeks the milk may be increased to three ounces and gradually increased to seven ounces of top milk in twelve to fifteen months. For the modification of milk I refer you to the valuable works of Smith, Holt and others. We must bear in mind, however, that there must be no fixed rules, that each case is an individual one and must be treated as such. Among other things which may be substituted for mother's milk is Horlick's malted milk, which agrees well with some children, and when there is difficulty in getting cow's milk that can be depended on is a very safe thing to give. All mild derangements of the stomach and intestines must receive prompt attention, for the larger portion of serious attacks begin as some mild disturbance, which being neglected becomes serious. We should teach mothers that these little derangements, though they seem trivial, are liable if neglected to result in a very serious condition.

TREATMENT.

One of the first things to remember is that in the very beginning of these cases digestion is not good, therefore it is important that food of all kinds be withheld, and the bowels thoroughly emptied. Especially should milk be withheld for twenty-four to forty-eight hours. Broths, albumen water, barley water or panopepton may be given. The withdrawal of milk allows the digestive organs to rest and enables you to clear the alimentary tract of curds and sour milk, which is very essential, for as long as the

alimentary tract contains milk in a state of fermentation it will be almost impossible for it to properly digest more milk. It would be like putting fresh milk in vessels that contain sour milk, the new milk would soon ferment. In mild cases after twenty-four to thirty-six hours the child if breast-fed might be allowed to nurse sparingly at intervals of about four hours, alternating with broth, barley water, albumen water or panopeptin, and if it causes trouble must be withheld again. It is important that we not overfeed these little fellows, bearing in mind that they are nourished in proportion to the amount of food assimilated and not in proportion to the amount taken. As a rule two hours is often enough to give nourishment and in some cases four-hour intervals would be better. If there is persistent nausea and vomiting nutrient enemas with brandy may be given to advantage. It is a difficult thing to nourish these patients, and the tact and skill of the physician are frequently taxed to their utmost in trying to find what will best agree with each individual case. In artificially-fed children after the acute symptoms have subsided and when you have great trouble in finding a food that they can take, you may get good results if you can secure a wet nurse.

MEDICAL TREATMENT.

In remembering that we have not only indigestible food in the alimentary tract acting as an irritant but that we have myriads of toxine-producing bacteria as well, we see that the sensible thing to do is not to check the diarrhea, but assist nature by emptying the bowels at once. Unless the vomiting has already emptied the stomach, an emetic, large draughts of sterile water or lavage may be resorted to for this purpose. Then a purgative, as castor oil, or calomel followed by castor oil, should be given. If there

is some difficulty in getting the bowels thoroughly emptied it is well to irrigate the lower bowel with normal salt solution. This is sometimes a very valuable remedy, as it assists and hastens the action of the cathartic. When tenesmus is great either hot water or ice water may be used in small quantity the same way. Later astringents may be added, such as tanic acid one dr. or F. E. Hamamelis 2 dr. to a pint of warm water. Holt says that "other drugs are of secondary importance. That their value is certainly overestimated." While this may be true, there are other things that may be done and other drugs that may be given which will help us in the treatment of these cases. If there is considerable tenesmus with frequent stools that can not be controlled with irrigation, a little dover's powder, paregoric, or one or two drops of laudanum may be given at intervals necessary to give some rest. A good way to administer this is a few drops of laudanum, say two to ten drops, in a starch enema, after using the saline irrigation. This is a very good way of administering it when there is considerable nausea. But it must be borne in mind that the effort of nature is to clear the alimentary tract of this offending material, and our efforts should be along the same line. So it is important that we not use opiates too much. It is best to give it alone in quantity and at intervals necessary to get the required effect, the diminution of pain and the control of peristalsis, being careful not to give enough to bind the bowels. Remembering that one great causal agent in this trouble is the presence in the alimentary tract of a large number of bacteria which produce toxines that are poisoning the system and diminishing the power of resistance, we should not forget to try to eliminate as much of this poison as we can and to render the remainder as inert as possible. We have already spoken of elimination, we now come to the question of intestinal anti-

septics. We know that it is impossible to render the alimentary tract aseptic, neither can we render our hands perfectly aseptic for a surgical operation, but this does not justify us in not approaching just as near it as we can. There are drugs which have been given with this in view, such as salol, bismuth, resorcin, the zinc salts and occasionally calomel or mercury with chalk. The following prescription I have found good for most cases: Benzothymol, ½ ounce; elixir panpeptic, 1½ ounces. M. Sig. Ten to twenty drops, according to age, every two to four hours. This is palatable, usually allays the nausea, and has a tendency to prevent fermentation in the alimentary tract. Stimulants are required in the majority of cases. Brandy is perhaps best, but whisky will do, and may be given in albumen water or a little sweetened water. Stimulants are indicated by a weak rapid pulse, cold extremities and general prostration. From fifteen to thirty drops, for an infant one year old, every two hours may be given, but for short periods a much larger quantity may be required. The tendency is to use too much medicine in these cases, and frequently it is well to stop all medicine, look well to the regulation of the diet and with stimulation, irrigation and plenty of fresh air we sometimes see that our patients do better than with so much medicine, especially late in the case. During convalescence the same care should be exercised in feeding, and every little derangement of digestion should be met by a slack in feeding, mild cathartics or irrigation of bowels. General tonics are required, such as arsenic, nux vomica and cod liver oil, but the latter must not be given until the stomach tolerates it, then continue for some time.

DISCUSSION ON DR. M'ARTHUR'S PAPER.

Dr. James H. Crawford, of Martin: I have listened to Dr. McArthur's paper with considerable interest. It is a very good paper, and one I have enjoyed very much.

Enterocolitis is a trouble which we all have to deal with, and it is very essential for us to instill into the minds of parents a considerable degree of confidence as to our ability in battling with this disease. I have been practicing medicine six or eight years, but my experience teaches me that as little medicine as I can give is the best thing for these children. Where the mother is in good health and can nurse the child at the breast, it is the best nourishment we can give to a patient of this kind, especially where the child is not weaned. In connection with this I would suggest the giving of lime water.

As to the secretions of the stomach and bowels, in this trouble, I would suggest small doses of calomel, and that is my usual remedy in treating cases of enterocolitis. Of course, once in a while we have to give bismuth subnitrate in order to absorb the gaseous matters that collect in the stomach and bowels, in connection with charcoal. I had a case not long ago in which the grandmother interfered. When I walked in one morning she was beating up common charcoal. She had the right idea, but it was not the kind we use. We need a very fine product of charcoal. I took the charcoal into my hand, rubbed it between my fingers, and found there were little particles I could feel like mustard seeds. I told her that it would irritate the child, and that if she was going to take charge of the case I would step down and out. Gentlemen, you take a case of enterocolitis, the least irritating medicine you can give the child will be the best for it.

Dr. C. L. Williams, of Columbus: I wish to impress upon the physicians present the importance of one point

in this paper, and that is, where we have bottle-fed children, my experience has been that a large proportion of the cases of enterocolitis can be traced to or found in bottle-fed infants or children. The great remedy is to change the diet. You may clean out the bowels, yet if you continue a milk diet you will have trouble. Invariably, if it is possible, secure a wet-nurse—a healthy negro woman, if possible, and if the child has been weaned you can take the milk from the breast and by giving it to the child, it will recover. I recall several cases, one of them in particular, that was at death's door, so to speak. A little child, six months old, had been weaned by its mother, but had become emaciated to a skeleton. It scarcely had any flesh on its bones, and I procured a wet-nurse for it. The baby would not nurse. I was almost in despair in not knowing what to do. I tried all remedies. I tried all sorts of foods, with no effect. But I told this woman to make an effort to take milk out of the breast and give it to the baby. She did so, and by giving first a tablespoonful, the baby took it very readily. She came to the house about four times a day, fed the baby in that way, and without any medicine. With the exclusion of all remedies, that child soon recovered. That is one of many cases I have had experience with.

I would suggest that whenever a physician has a case of enterocolitis to deal with in a child, he makes the best effort he can to secure a wet-nurse, and if the child has been weaned and will not nurse, get a nurse so that you can milk the breast and let the child take the milk.

Dr. R. R. Kime, of Atlanta: Much can be done toward trying to save the lives of children who have enterocolitis. The essayist has called our attention to the intervals of feeding which should be based on the character of the material that enters the child's stomach.

One point I wish to emphasize especially is steriliza-

tion of the water that the child drinks, boiling it. Another point is to see that the food which enters the child's stomach is in proper condition, and not given too often. Many a child is killed by over-feeding; very few children are starved by under-feeding. If we can get what is put in the stomach properly digested and assimilated, much good can be accomplished. Take away milk, which often aggravate trouble of this kind. We should see to it that the alimentary canal is in such a condition, as well as the stomach, that the child can properly digest and assimilate the milk that is put into the stomach. During the time this food is withdrawn, and artificially prepared food is used, such as panopepton, etc., we should see to it that the albumin water and soups will not ferment and thus furnish a nidus for the development of germs in the alimentary canal.

One criticism I would offer in regard to this paper is the amount of stimulants used in these cases. As I become older and watch the conditions more closely, I have less use for stimulants. The only stimulant my patients get is the small amount contained in the panopepton or peptonoids that are administered.

Another point: After you have gotten the patient over the critical stage and begin to resume the administration of milk again, the milk wants to be in proper proportion to the age of the child, and the nourishment should not be administered too often. Four hours is sufficiently close, and with only artificially prepared food between, which gives the stomach rest or time to recuperate and digest the food before another amount is put into the stomach. The milk may be diluted with water and cream added, in proportion to the age of the child. The milk must be in a sterile condition; the water must be sterile, and then I have found more benefit from the administration of citrate of soda than any other preparation I have used. I have had

tablets made of four grains of citrate of soda added to the milk in proportion of one or two grains in the milk, adding cream as the child grows older, and as the stomach gets in a condition to take care of it. I had great difficulty in getting the milk digested in these cases until I added citrate of soda.

One word more. I am not one of the kind who is willing to banish from my armamentarium all drugs. I am not a nihilist in regard to therapeutics. There are medicines of an antiseptic character that can be used to great advantage in not only sterilizing the alimentary canal in these cases of enterocolitis, but medicines which help to digest the food when nature is crippled.

Dr. W. P. Williams, of Blackshear: The doctor suggested the advisability of feeding children at long intervals. The question arises as to the quantity of food one should give to these infants. Personally, I would prefer to divide the quantity of food in two hours, giving one-half of the quantity in two hours, and giving the bulk at four-hour intervals. The tendency would be not to overload the stomach in the four-hour interval.

Dr. E. P. Bomar, of Lyons: The country doctor, in South Georgia especially, in meeting these cases of enterocolitis in children finds that they nearly always have malarial complications. In fact, I look for them, and I think it is well that every one should be on the lookout for them.

As to the antiseptic treatment, I endeavor to render the alimentary canal as nearly antiseptic as I can get it, believing that this is ideal treatment in dealing with this trouble.

Dr. S. A. Visanska, of Atlanta: I want to thank Dr. McArthur for bringing up this subject, because we are about to get into the hot season when we have many of these cases to treat. I wish to compliment him on the ex-

cellency of his paper. He has covered the ground very well from almost every standpoint. Of course, every case we treat will be different in some respects, and it is hard to outline in a paper the exact method of treatment or feeding of these patients.

One of the gentlemen who discussed the paper said that where a child has enterocolitis, especially if the child is on artificial food, one of the first things is to stop that food entirely, especially cow's milk. There is no greater germ-breeder than cow's milk. The colon or intestine is already full of bacteria, and when you add cow's milk you are adding fuel to the fire. We have to use eliminative treatment. We must reduce the temperature by sponging and by the application of an ice-cap to the head. As a rule, we do not give internally antipyretics, because they have a tendency to weaken a heart that is already overburdened with the toxemia.

In regard to the diet, we have to use some of the predigested foods, or egg albumin with sterile water. All water should be rendered sterile before it enters the baby's stomach.

In regard to stimulants, I have had some experience in treating this disease with these agents, but I do not think it is a good idea to wait too long before beginning stimulation. I think we ought to start stimulation when the pulse is over 120. We should not wait too long and then be compelled to resort to over-stimulation and push it for one or two days, using brandy, nitroglycerine, digitalis, and other preparations. It is not wise to wait until a child is about dead before beginning to resort to stimulation. I do not use stimulation too early, and that is a point we have to decide in each case. We have to decide when to return to the cow's milk in case a child is being artificially fed. I do not return to cow's milk until after the tempera-

ture has been normal for at least two or three days. If the temperature is normal, you may reasonably conclude that you have pretty well gotten rid of the infection. When I return to cow's milk, I begin on a low percentage of fat, and if the preparation agrees with the child, I increase the strength of the food gradually.

Another important point in treating these infants is to see that the feet are kept warm. I do not believe there is anything that tends to cause enterocolitis in children, besides the changes in temperature, more than cold feet. You remember the old adage, "Keep the feet warm and the head cool," and I think it applies especially to infants in all diseases. It is well-known that infants can not resist the two extreme temperatures, that is, extreme cold or extreme heat, for in the winter we have bronchitis and pneumonia in children, and in the summer we have intestinal disorders. They are both disorders of extreme temperature, with bacteria added to them.

Dr. McArthur (closing the discussion): In the first place, I want to thank the gentlemen for discussing my paper so freely.

I do not know that I can add anything of interest to what I have already said. With regard to returning to cow's milk after withdrawing it, I would like to say that each case, being an individual one, should be governed by the circumstances and conditions. In considering prophylaxis, I stated that if a child was artificially fed, especially if milk was given it, it should be withheld for twenty-four or forty-six hours, or longer. Twenty-four hours, I think, in some cases is long enough, where I see the patient in time, and can withhold the milk soon enough. In other cases that are more violent, which have lasted longer, it may be necessary to withhold the milk longer.

With regard to the use of stimulants, I believe that all cases do not require alcoholic stimulants. I believe I

stated in my paper that most cases did require stimulants. I mean by that, most cases that go on for a few weeks. There are a few cases that only last for a few days, where the system is not depressed by the toxemia, by the frequent discharges, and tenesmus, and it may not be necessary to administer alcoholic stimulants to any of the cases that last for several days, or even for a few weeks. However, I think many of these cases will require the administration of some form of alcohol.

In preparing a paper on this subject, I found it was impossible to mention all of the items of interest in the time allotted to the reading of papers, and when I began to prepare this paper, I saw that I had to cut it down to within the time limit.

As regards sterile water, of course we should always restrict the patient to the use of water that has been sterilized.

With regard to dieting the patient at intervals, each case is an individual one, and we must be governed very largely by the circumstances. If there is considerable nausea, I am sure, sometimes it may be necessary to lengthen the intervals of feeding to four hours. At other times, with a good deal of nausea, we may get in the required amount of nourishment by giving small quantities, frequently repeated. However, we should be governed by the circumstances in each case.

The question of malaria is always an important one in a malarial district, and I am sure that all of us who practice medicine in Southwest Georgia have learned to look for malaria as a complication in every disease we have to deal with. We look for it in accidents, during the lying-in period, also in cases of pneumonia, bronchitis, grippe, and everything else, and we may look for it in this disease we have been discussing, and these complications and symptoms are to be met.

THE TRAINING OF EPILEPTIC AND FEEBLE-MINDED CHILDREN.

BY WESLEY TAYLOR, M.D., ATLANTA.

Just how great a responsibility and how heavy a cross has been placed upon a family into whose midst providence has seen fit to send one who, through enfeebled mentality, is unable to appreciate his obligations to society or to adapt himself to its demands, no one who has not had such an affliction laid at his immediate doorstep can fully realize. He who has had a loved one to protect from the unscrupulous, to shield from the mockery of prying eyes or who with embarrassment has offered apologies for the maladroit pranks of a dear one, can sympathize and appreciate. In this broad land of ours there is no family so high or so mighty but that in a few generations will number among its members some unfortunates belonging to this class. You can scarcely look back on any family you know without finding such a luckless one under the protecting shadow of some stray branch, if you know them well. Rich or poor, high or low, weak or strong, *all* bear some blighted or imperfect blossoms. It can't be helped—it's a part of nature and governed by that remorseless law, "The survival of the fittest." If all of us were equally endowed, the struggle for existence would be turned into one horrible carnage. It is perhaps better as it is, and we take conditions as they are, but it is our duty to make the best of them. We turn with horror from the old Spartan law which condemned the weak, the crippled and the imperfect to destruction in the beginning. There may be some who from a distance stand and say, "A good idea, I ap-

prove," but let the blow fall within their *own* family circle, and they can not cry out too quickly. The poor unfortunates are not responsible for their existence. Their being was thrust upon them and they can not well help but live, though doubtless many of them, if their wishes could be consulted, would prefer otherwise. They are here, and they complicate a household more or less wherever they are. They must be looked after, cared for, protected, fed, clothed and sometimes nursed. In many cases they require a special room or an attendant. They can not be left alone or permitted to meet the guests of the house. There are many who require all the attentions of a baby, or more, as long as they live. Frequently they remain a skeleton in the closet for the entire family, and the mere mention of their existence is tacitly understood to be a painful and tabooed subject. Every medical man in this audience must have run across numerous instances like this in the course of his career. In the families of the rich they are, possibly, only an encumbrance. They send them off to high-priced sanitariums, and the matter is settled. Those in moderate circumstances find them a serious embarrassment, and usually solve the matter by an attendant. The poor—alas, and the enormous majority of us *are* poor—it is for them that we are especially sorry. In the families of the destitute such an affliction is *a terrible calamity*. Haunted incessantly by the problem of mere existence, compelled to toil unceasingly for their daily bread, even the children look forward to that time when they can help to lessen the strain of necessity which surrounds their domestic circle. Under these conditions it is that the luckless, helpless ones really suffer. Unable to afford even the humblest sort of an attendant or anything more than the barest necessities, and compelled frequently by circumstances to leave an unfortunate and

helpless creature alone, it is inevitable. I remember well when a boy and out hunting in the country, I came to an humble cabin where, during the absence of father and mother, a feeble-minded youth was chained to a staple in the wall, just far enough from the stove to avoid danger to self or surroundings. And *there* he was obliged to remain all day, waited upon by his smaller brothers and sisters. It was humane and sensible, but revolting.

One could go on all day describing and enumerating the sufferings endured by the family, as well as by the child, who has fallen in destitute quarters, but our imagination needs no such stimulating.

There are all grades of mental deficiency, from the merely backward and inefficient to the most extreme forms of idiocy. Degeneracy manifests itself in many forms. It may be mental or physical, but it not infrequently is a combination of both. The merely odd person may be a mild example of the degenerate. If we were to start to number them we would know neither where to begin nor where to stop. Satisfactory statistics to show how many such children come within the scope of this article, or need such teaching, are all but impossible to obtain. It is a matter of opinion on which no two people are likely to be of accord. Every school, however small, has several children, at least, who are dull or backward in their studies. Just where the normal ends and where the abnormal begins is difficult to say. Which ones are beyond the reach of domestic tutelage depends on the family. No statistics can be had for our own State, but taking the average of statistics for other States and cities that are obtainable, one child out of about 1,200 is in need of special teaching, and one out of 4,700 is a *positive burden* to its family. These figures are for this country and are for backward children *only*, and do not include the lame.

the halt, the blind or the epileptics, and are *too small,* rather than too large. Those who are helpless and who are serious charges to their families, are the ones that concern us only.

At this rate there would be not far from 1,000 white children in this State in need of special advantages, which are either *not* obtainable here, or which are beyond the means of their families. There is a very clear-cut difference between feeble-minded and insane children. The two must not be confused. The average child growing up in the humbler paths of life receives but meager training. If, perchance, it is not ordinarily receptive and imitative, and lacks energy, its way is not smooth. The parents soon notice its deficiencies, and, loath though they may be to accept them, the child is soon recognized as foolish, or idiotic, and from that time on receives less attention than the others, when as a matter of fact it needs more. Among the common people the greatest trouble is experienced with those who are too backward to learn to walk, associated, most likely, with a total disregard for all other bodily functions. These cases soon come to be regarded as hopeless, while as a matter of fact a large proportion are not. They need special training, which their family for many reasons can not give. They do not know that anything could be accomplished through training, and would not know how to go about it if they did. Moreover, they do not have the time, and probably lack the firmness and authority to accomplish it in *any* case. The child doubtless was spoiled before the gravity of the situation was realized, and then it was too late as far as the family is concerned. To get the best results a great deal of firmness—sometimes almost to harshness—coupled with patience, persistence and invariable kindness, is absolutely required. The child may be capable of retaining

only a very few ideas, which must be carefully selected, and, in order to firmly fix them in the child's mind, incessantly repeated. It is soon manifest to any one that skilled teaching is indispensable, and that results are scarcely to be obtained at home. As an illustration of what *can* be done for children by proper training, we have only to turn to the well-known case of Helen Keller—a bright, happy and useful young woman. An exceptional case, I grant you, but if she had been born in a poor family, whose every energy was bent toward gaining a livelihood, she would scarcely have mastered the art of walking. There are hundreds of others with possibilities almost as great as hers.

I once spent a day at the great Bicetre Hospital, just outside the wall of Paris, as a guest of one of the internes in Bourneville's division for feeble-minded children. I roamed about the rooms, where visitors are usually not permitted, more or less as I wished, chatting with the different children or their attendants half the day. There were some wards I can scarcely describe here. As I hurried through them I thought the old Spartan law was a good one. Surely such children would be better dead. I didn't stay long *there*—curiosity was soon satisfied. Human beings they were, too, but with scarcely even the instincts of animals. I couldn't help but think what a blessing it must be for the family to be relieved of their care. Their nurse told me that many of them were not as helpless as they seemed. In *one* of the rooms the nurse tied the more hopeful ones up in a sitting posture at certain periods of the day, and taught them, little by little, the art of sitting up. More advanced ones had mastered not only sitting, but walking as well. One boy of 14 or 15 had just graduated from a walking support and now went about unaided, and was allowed the freedom of the playroom. He had developed from a point where he

couldn't even sit up in bed. It wasn't, perhaps, anything brilliant to the thoughtless observer, but contrasted with those only a few rooms away it was marvelous.

Though the comparison is most homely, these poor creatures are taught little by little, slowly and with infinite painstaking, just as *animals* are trained. Children who have never learned to talk are taken, and, if no organic defect prevents, are taught to speak properly. Two or three at a time are taken at a small table by a patient old teacher and taught language, sound by sound, and word by word, in a practical way. It may take weeks to get the child to make the first attempt at trying, but the teacher persists, till a beginning is made. Then progress is usually rapid. One of the most interesting parts of the training is that in which the child learns the daily routine of dressing and bathing. They are run through this work in classes, and the imitative faculty, present even in idiocy, has freer play, aiding much the rapidity with which the lesson is learned. Some children may take lessons along several lines at the same time, but there are some who are kept at one thing till it is thoroughly mastered before beginning anything new.

Reading and writing are taught to a limited extent, varying with the child, for it must not be forgotten we have many grades of backwardness among these pupils. In some cases the teachers are glad to *succeed* in teaching the barest rudiments, and to be able to permit the child's freedom of the playground, while in other cases the child always remains a bed-ridden charge. The more docile ones are taught some useful trade, and in Bicetre everything from gardening to bricklaying and from tailoring to carpentering is taught, and a boy frequently learns to aid materially in earning his own livelihood.

Bicetre and all similar institutions not only do inesti-

mable good to the individual, but relieve hundreds of homes of what is, in truth, a most oppressive burden. By the segregation of these unfortunates it prevents them from marrying and reproducing their kind, thus conferring a great blessing on humanity in general.

Besides the class of so-called backward children, which we have just discussed, there is still another luckless class for which much can be done, namely, the epileptics. They are more numerous in this country as a class than the *helpless* degenerates, but are much more difficult to recognize. There are many of them *just* as unfortunate, for they are more appreciative of their condition. Shunned by their fellows, turned away from school by frightened teachers, unable to hold any steady position on account of their dreadful fits, they meet discouragement at every turn, in spite of the best of efforts. They are more than likely to grow up ignorant, illiterate, soured, and, being only human, is it any wonder if they should turn to criminals? I am struggling with a *sad* case now, and the task at this moment looks all but hopeless. He is a bright boy of twelve, ambitious and of good impulses, the son of a destitute widow. He has been epileptic from infancy, having sometimes had five or six attacks a day. No school will accept him, even for twenty-four hours, and he asks if it is any wonder he can't read. He has tried many positions and could fill anything in reason, I believe, but he has never been able to hold to anything as long as a week. Employers have even paid him to quit. I began to treat him, and he got much better and went five weeks without an attack, so, with the aid of some kind people, we got him into a private school where he would not only get instruction, but also good food and physical attention —a thing heretofore unknown to him. Word has just been received from his teacher asking to be relieved of him.

He has had two "fits," the others are afraid of him, and she must either send him away or lose them. There is no suitable institution to be found for him in our State where he can go or where he can get proper attention, yet I firmly believe he has in him the material, which, properly developed, would make a good and useful man. What will become of him if we let him go? On whom does the responsibility for his future rest? On the good old State of Georgia, I believe. The rich and the affluent may send their children to private sanitariums, and there are some which are good, but they are not only few, but also a heavy drain as well, even upon a rich man; to the poor man, this is impossible. What shall he, what *can* he, do? We would most of us prefer to see ours dead than in an ordinary insane asylum. The stigma of that in itself can never be eradicated. If there is any hope for them the asylum, next to the almshouse, is forever to be avoided. There are a great many estimable people who look upon even an ordinary hospital with horror.

What we need is a State school for the feeble-minded and epileptic, open and free to any one in the State, either to train their children up to a certain standard of efficiency, or to relieve them of their embarrassment. It is to arouse the interest of the State Medical Society that I am here, and to get its co-operation and endorsement.

Manual training is at length beginning to be appreciated and valued as it deserves, and in connection with other training it is intended to teach some useful and simple trade to those capacitated for such work.

Can not the philanthropic people interested in this noble work, and who are trying to get the State to appropriate a certain sum to help maintain this sort of an institution, count on the *indorsement* of our State Society at least, if not, perhaps, its active co-operation?

DISCUSSION ON DR. TAYLOR'S PAPER.

Dr. H. D. Allen, of Milledgeville: I do not know that I can add anything of interest to the excellent paper that has been read by Dr. Taylor. I appreciate it very much, for the reason the author has covered the ground admirably. It does seem to me, however, that it is incumbent upon the State to establish a colony for epileptic or feeble-minded children. They are a class which should be cared for. We know how much good has been done for the deaf and dumb. The deaf and dumb can be taught to read and write by experienced teachers, and those who handle feeble-minded children get to be more efficient than the members of the families of these defectives. Neurotic or feeble-minded children should not be cared for, in my judgment, at home, as the members of the families are either too indulgent or too harsh in their treatment of them. They do not regard them as defectives. They think the things they do are done through pure meanness, prompted by an evil spirit.

Dr. R. R. Kime, of Atlanta: This is one of the most important papers that could possibly come before the Association. We, as a medical profession, are looked to on certain lines for suggestions toward the advancement of civilization. It seems to me it is time that the Medical Association of the State of Georgia and the profession of the State at large should awaken to its duty along humanitarian lines. This is a problem that appeals to those who have studied and investigated it to some extent. Here we have a class of citizens, born into the world, chained with something they can not themselves get rid of or eliminate. They are not responsible for their condition, and we as humanitarians and as representatives of one of the professions of the State of Georgia have a duty and responsibility resting upon us that we can not shift without doing

ourselves an injustice. It is time that the profession of the State of Georgia was looking to humanitarian interests in order to build up the people of our State, and there is no class of defectives that are more in need of the sympathy and support of the medical profession and the people and business interests of the State of Georgia than the epileptic and feeble-minded. Many of these cases can be taken in infancy, and with proper surroundings, proper care, and proper hygiene, made useful and sustaining citizens. Show me a man who can live without his surroundings and without the aid of other people. We are interdependent beings. We depend upon each other for assistance and support, and when we do our duty it comes home to us that we should aid those who can not aid themselves, and there is no more important matter for us to attend to in the State of Georgia than to prepare to care for the epileptic and feeble-minded, and as Chairman of the Committee on Medical Education we expect, before the adjournment of this Association, to present a resolution looking forward to the establishment of a colony for epileptics, and an industrial school for the feeble-minded, and it seems to me the medical profession of this State should rally to the support of such a movement as one man, and make their influence felt for the good of humanity and the brotherhood of mankind. [Applause.]

Dr. Thomas D. Coleman, of Augusta: I wish to express my appreciation to Dr. Taylor for his paper. It is a valuable contribution to the subject, and it should receive the hearty endorsement of this Association. It stands to reason that it is to the interest of the State to care for these mental wrecks, to care for those who are mentally deficient, and it is not only an economic problem, but it is a humanitarian one, and we have ample Biblical authority for the statement that "Inasmuch as ye have done it unto these little ones, ye have done it unto me."

Dr. R. R. Kime, of Atlanta: I want to move, Mr. Chairman, that this Section in General Medicine endorses the idea of requesting the establishment of a State colony for epileptics and an industrial school for the feeble-minded.

(Seconded and carried.)

Dr. Taylor (closing the discussion): I wish to thank the gentlemen who have taken part in the discussion, and for their endorsement of this movement. There happens to be quite a number of philanthropically inclined people in Atlanta who would give a considerable amount of money toward the establishment of such a State institution, but before they do so they want to be assured that the State will stand back of them. They want to make it successful, and have enough money to assure its proper maintenance. Before they carry the matter any further they wish to have the endorsement of the State Medical Association of Georgia, and that you have given me, for which I thank you most cordially.

DIPHTHERIA AND ITS TREATMENT.

BY R. V. MARTIN, M.D., SAVANNAH.

In reviewing the early history of diphtheria, I find none more conclusive than that furnished by Park, in which he says "that the specific contagious disease which we now call diphtheria, and according to our present belief can be traced back to almost the Homeric period of the Grecian history, was believed by the Greeks to have been communicated to their country from Egypt.

The descriptions of the laryngeal and pharyngeal manifestations of the disease left by Aretæs, leaves no doubt that it was of diphtheria he wrote.

Galen, in his remarks on the chironian ulcer, tells us that the pseudo-membrane was gotten rid of by coughing in the laryngeal form of the disease, and by hawking in the pharyngeal form.

From time to time, for the next one thousand years, we hear of epidemics both in Italy and other parts of the civilized world. In 1517 we read of an epidemic of malignant form raging in Switzerland along the Rhine and in the Netherlands.

The disease now crossed to America, and in the New England States we get clear accounts of its ravages. Samuel Danforth lost four of his eleven children within a fortnight by a "Malady of the bladders of windpipe."

In 1765 Home, a Scotchman, tried to show that croup and pharyngeal diphtheria were different diseases, or in bacteriological terms were due to different micro-organisms, and this subject remained under controversy until

it was recently settled that while most cases were undoubtedly diphtheria, a few were not.

Bard, an American, supported in 1771 the opposite theory from Home, considering the process the same forever localized; in this ground he was much nearer the truth than Home.

In 1821 Bretonneau published his first essay on diphtheria in Paris, and gave to the disease its present name; his observations being so correct that little advance in knowledge took place until the causal relations of the diphtheria bacilli and their associated micro-organisms began to be recognized.

Klebs first showed a bacillus peculiar in appearance to be invariably present in false membranes from the throats of those dying of true epidemic diphtheria—a short while after Loefler published the result of his findings—he also found the bacillus described by Klebs, in the throats of many cases of diphtheria. By inoculating the mucus membranes of susceptible animals, characteristic membranes were formed and frequently death or paralysis resulted with characteristic lesions.

Therefore, from the many tests made, Park concludes that the name "Diphtheria" should be applied to that acute infectious disease usually associated with pseudo-membranous affections of the mucus membrane, which is primarily caused by the Klebs-Loefler bacillus.

This bacillus is pathogenic to many animals—the virulence varies materially—it has been shown that it will take a .002 cc of a 40 hr buillon to kill the guinea pig, while it would require one cc of culture of another bacillus to kill.

Bacteria having no virulence, but showing some morphological characteristics as Klebs-Loefler bacillus have been demonstrated.

Versin and Roux have succeeded in partially isolating the diphtheria toxin by filtration through porous porcelain from cultures of living bacteria.

The most virulent bacilli ever found were taken from the throat of a case simulating a mild tonsillitis. Again, virulent bacilli have been found in healthy throats of persons brought in contact with the disease. While associated with many cases of diphtheria I took a culture of my own throat and had it examined by the New York Health Department and received a positive report, but of course, suffered no ill effects from their presence.

Park and Bebee examined 330 throats of people who had not come in contact with the disease and found 24 infected, two of whom subsequently developed the disease. In 304 of 605 cases the bacilli disappeared within three days after the disappearance of the membrane, in 176 cases they persisted for seven days; later a case was found in which the bacillus existed for six months. Various cocci, viz.: streptococcus, staphylococcus and pneumococcus, are frequently present in diphtheritic throats, and play an important part in the disease, often leading to complications, as sepsis and broncho-pneumonia.

While there are no authentic cases of transmission of the disease from animal to man, there are many cases on record in which we have been unable to trace their origin, and as we have no proof of its spontaneous occurrence we can not but believe that the disease is but contracted from that source.

Loefler found that the bacillus remained virulent on dried membrane for fourteen weeks; Able found them existing on silk threads 172 days and upon a child's toys kept in a dark place for five months.

There must be an individual susceptibility to diphtheria as in all other acute infectious diseases. Infants in first six

months are only slightly susceptible, the greatest degree of susceptibility being between the ages of two and a half and ten years. Adults are only seldom attacked by the disease, and two attacks of the disease seldom occur in the same individual.

Frankel, Aronson and Behring, and others succeeded in immunizing animals by the inoculation of virulet, or somewhat attenuated cultures of diphtheria toxin.

Pathologists have shown us that the diphtheria bacilli are found in necrotic tissue, and in the exudation, and that the masses found deep down in the membrane do not represent a downward growth but have been covered up by a further formation on top; nothing specific has been noted in the membrane formation of diphtheria. Typical fibrinous and hyaline membranes have been found in other parts of the body in which bacteria played no part; in the deeper tissue degeneration and exudation take place, the connected tissue and blood vessels undergo a hyaline degeneration.

Heart—The myocardium is attacked and we find an absence of the bacillus showing the lesion to be due to the toxin in the blood.

Lungs—In the lungs broncho-pneumonia is the chief lesion.

Spleen—Shows no difference microscopically from the normal.

Liver—Nothing characteristic is found. Intestines unimportant.

Kidneys—The lesions here are not due to the action of the bacillus but to its toxin. The lesions vary from a mild degeneration to conditions of acute nephritis. Those cases running a rapid course rapidly show a severer form of degeneration.

Nerves—The nerves undergo fatty degeneration from a mild to a severe form.

Symptoms—From a clinical standpoint we have the tonsilar, nasal, pharyngeal, laryngeal, and occasionally cases without a membrane. These are again divided into mild and severe forms. In the tonsilar form there may be only a slight membrane formation on the tonsils with slight constitutional symptoms. This class of cases might be easily overlooked for a local disease, partaking of the character of a croupous, or follicular tonsillitis, in fact it was in this class that Park found his most virulent bacilli. The onset is slow, temperature is possibly not above 101 degrees. The symptoms not being severe enough to confine the patient to his bed. The membrane remains the same color throughout. Inflammatory changes in the throat are slight. Lymph glands behind the jaw slightly swollen, membrane remains about one week, some times less than that. Forty of such cases were examined and thirty showed the Klebs-Loefler bacillus. The remaining were non-virulent.

Severe—Here the modes of onset may differ. The symptoms local and general may develop either slowly, or rapidly, within thirty-six to forty-eight hours. They may become fully developed. The mucus membrane of the pharynx becomes swollen, the uvula elongated and a thick fibrinous pseudo-membrane extends over the membrane of the tonsils and pharynx; there is a marked enlargement of the glands of the neck and adjacent tissue, generally the nasal cavities are involved, as this class of infection has a great tendency to spread, and from the nose there is a very irritant and ill-smelling discharge—so great may involvement be that the nasal cavities are completely blocked and irrigating fluids can only be passed through them by using high pressure; on the other hand there may only be a partial blocking, in which case fluids pass through easily. Within seventy-two hours the fever

generally subsides, pulse becomes slow, intellect is clear. After the disease has reached its height, which is generally within seventy-two hours, the local symptoms remain stationary until about the fifth or seventh day; at that time the membranes begin to loosen, peel off and leave an ulcerated area; all symptoms abate, and the patient recovers unless paralysis appears.

In another class of cases the toxin produces a systemic poisoning, without the formation of a membrane. I have never seen one of this type. In the less favorable cases the temperature may be slight, pulse rapid, or in toxic cases slow; urine contains albumin and casts, the patient may die from uremic convulsions, or die by asthenia or paralysis of deglutition, and respiration, or pneumonia may develop.

In the septic cases the membrane appears gangrenous, high temperature, rapid pulse, pneumonia, or otitis media may develop and the child generally dies.

Laryngeal—The laryngeal form is the type to which I specially want to direct your attention, and of this there are two classes, so far as the mode of onset is concerned, namely, by extension of the process from the pharyngeal type, and those occurring primarily in the larynx. In this latter type loss of appetite, slight sore throat, hoarseness, some fever and cough, should put the physician on his guard, and a careful differential diagnosis should be made from a catarrhal spasm of the larynx, and to my mind the quickest method is obtained by the use of a little chloroform in which case this dyspnea due to spasm is relieved; whereas, in membranous formation it is little affected.

As this disease progresses hoarseness increases, breathing becomes more labored, child becomes restless temperature rises to about 102 degrees or 103 degrees, cya-

nosis develops, marked recession of the soft parts of the chest wall, and the child appears greatly frightened, at intervals the child dozes only to be awakened by intense struggle for air, intellect is clear; unless relief is given these symptoms increase until the child either suffocates, or dies slowly, by asthenia. The pure laryngeal cases die much more rapidly than those of the former class.

Diagnosis—In making a diagnosis, we must consider both the clinical and the bacteriological findings. Irregular patches of a grayish, or slightly yellow pseudo-membrane appearing on the tonsils with a tendency to spread, would indicate presence of diphtheria bacilli. In exceptional cases one may see the borders of the faucial pillows and of the uvula covered with an exudate which may resemble a diphtheritic membrane, and yet not be diphtheria.

However, a thick, grayish pseudo-membrane covering portions of the tonsils, soft palate, and nostrils is generally due to diphtheria bacilli.

A sudden laryngeal obstruction is not indicative of true diphtheria.

A nasal membrane is indicative of diphtheria. A nasopharyngeal involvement is generally a severe type of the disease.

A primary membranous inflammation of the larynx may be regarded as diphtheria; paralysis following a membranous inflammation is conclusive that the disease was diphtheria.

We should, also, consider exposure, mode of onset and rapidly developing anemia.

The presence of the Klebs-Loefler bacillus in a case suspected as being diphtheria should be regarded as true diphtheria. Cases yielding negative results, we must consider the time of taking the culture and the ability of the bacteriologist.

Prognosis—This depends upon the location and extent of the membrane together with the existing toxemia. The dangers most to be feared are involvment of the larynx, broncho-pneumonia, paralysis, nephritis and sepsis. Cases with a slight membrane on tonsils generally recover; cases in which there is very little or practically no membrane present recover, but this class should be watched on account of danger of infecting others. Cases with extensive membrane and marked constitutional disturbances mortality at all ages is high; more especially so in infants.

Treatment—Properly isolate all cases upon suspicion. Immunize all coming in contact with the disease with not less than three hundred to five hundred units of antitoxin, and bear in mind that immunization lasts not longer than two or three weeks. Attending physician should wear a cap and gown while in the room, and he should also carefully disinfect his hands if he has come in contact with the patient. All throat secretions should be disinfected. The question as to the disposition of healthy members always confronts the physician. If they have been exposed to the one taken sick it is best to keep them at home for fear of infecting another family. They, of course, should be immunized and advised to gargle their throats with some disinfecting solution. At the end of the disease, the room and all of the fixtures should be disinfected. The operator in taking cultures should always wear glasses to protect his eyes from pieces of membrane which may be coughed up. The child should not be permitted to play with other children until two negative cultures have been taken.

Treatment--Many disinfecting solutions have been suggested, namely: Bichloride, carbolic acid, Loefler's solutions, peroxide of hydrogen and formaldehyd, but from

an experiment made by Drs. White and Somerset, under the direction of Dr. Park it was found that the difference in favor of the disinfecting solution was so slight that the New York Health Department has discontinued their use in favor of normal saline, which was found to be less irritant; much care should be used in administering the irrigation. Nasal irrigation in young children should be avoided, except when absolutely necessary; a sufficient number of irrigations should be used to insure cleanliness. I place all patients on a fluid diet.

Antitoxin—The immediate injection of four to eight to ten thousand units of antitoxin, preferably into the buttock of the patient by means of a sterile antitoxin syringe should be done in order to get the best results, and this treatment should be repeated in twelve hours if results are not obtained. The existing toxemia should be combatted with whisky, oz. 1 to 10 or 12 in 24 hours; cardiac weakness strychnine, grain 1-100 to 1-30 of digitalis and caffein. Jacobi advises up to 1 drachm of tr. cl. ferri, to be given both for its local effect and for combating the existing anemia.

In cases of paralysis of deglutition a soft rubber catheter should be used; all complications should be treated as separate diseases.

In the laryngeal type steam inhalations should be used. Calomel fumigations; for this an improvised tent should be prepared and fifteen or twenty grains of calomel on a live coal should be placed under the tent and allowed to fill the space with the fumes. Much relief has been afforded in this way. In some cases vomiting the patient has been resorted to. This should only be done in cases where the patient is strong and should not be repeated if it is seen not to be beneficial.

All the simpler remedies having failed to relieve the

patient and the stenosis advancing to such an extent as to cause much cyanosis and marked recession of the soft parts of the chest, intubation should be resorted to. This operation requires some experience. The method in operation in the New York Health Department is as follows:

The child is placed in a mummy dressing and placed on the table; the head is drawn well back, the mouth gag is very carefully applied, the index finger of the left-hand is rapidly passed over the tongue to the epiglotis, pulling it up; the tube on the introducer is passed along the side of the index finger by elevating the handle of the introducer and working the obturator, the tube is slipped into the larynx.

A metallic click corresponding to the passage of air through the tube indicates that the operation is successful, the child almost immediately drops off to sleep, the tube is left in from two to seven days. The intubated child should be fed on very small quantities of milk, the head being placed on a lower level than the rest of the body. Older children soon become accustomed to the tube as one is seen to hold his breath and drink very rapidly. I have seen children thus treated drink as much as a half cup of milk without stopping. Not more than two unsuccessful attempts should be permitted. The intubated child should be under the immediate observation of the physician, for at any time the tube may become blocked and require immediate extraction, or it may be coughed up. It is best in many cases to leave the thread attached to the eye of the tube and the same attached to the side of the patient's face, for it has been found by many operators that extraction of the tube is much more difficult than the introduction of the same.

Frequently it occurs that it is impossible to do an intubation on account of not having the necessary instruments. In such cases one should resort to tracheotomy and not wait until the child is practically moribund, as is so frequently the case, placing the mortality in such cases much higher than they would otherwise be.

BRONCHO-PNEUMONIA.

BY JAMES H. CRAWFORD, M.D., MARTIN.

This disease, which is usually a secondary malady, is met with almost exclusively in children. It has been termed the winter disease of infants and I feel a delicacy in presenting this, my feeble paper, to this body of men who have had more experience or perhaps better success in dealing with it than I have.

What I shall have to say with reference to this great subject will perhaps be nothing new to you, for I am not an author of any special note, and hence it is impossible for me to be altogether original in presenting this paper to you. What I know about this subject I have learned from older and wiser heads than mine and from the limited experience I have had with it myself.

As you all know it is a malady which affects one of the most vital organs of the body, if not the most vital organ of the entire system. It affects the organ which is involved when that dreaded disease known as the "great white plague" makes its debut into the human system. And while broncho-pneumonia is secondary to other diseases, pulmonary tuberculosis may be secondary to it. It also affects another most vital organ, namely, the heart, by the inflammation and congestion in the lungs, thereby causing extra duty for the heart to perform. As in lobar pneumonia there may be considered three stages: First, the stage of congestion caused by the pus or serum of the primary disease getting into the air vesicles. Second, the stage of consolidation, whereby the air vesicles become solid and airless. The only anatomical difference

between this stage of acute lobar and acute broncho-pneumonia are that the former involves a whole lobe, whereas, the latter involves only scattered portions of a lobe. Lobar pneumonia makes its progress steadily from one point to another, usually from the base of the lung upwards until perhaps a whole lobe or a whole lung is involved; while broncho-pneumonia begins in different portions at the same time. Third, the stage of resolution wherein the contents of the air vesicles become cheesy and degenerated ready to be absorbed or expectorated.

Etiology—As I said a while ago, broncho-pneumonia is usually a secondary disease, though it may be primary. It is most frequently met with in children between the ages of one and five. The predisposing cause of broncho-pneumonia may be any irritation of the bronchioles as a result of measles, influenza, whoopingcough, tuberculosis, or any of the acute infectious diseases. It may be caused by direct irritation from smoke and noxious gases and vapors. After an anesthetic is given you sometimes have broncho-pneumonia coming as a result of the bronchitis caused by the chloroform or ether. The broncho-pneumonia of tuberculosis is the most fatal form. Next to this form is one following any of the infectious diseases of childhood. The infectious broncho-pneumonia causes more deaths than do the fevers themselves, and when you stop to enumerate some of the infectious fevers, or diseases, as measles, scarlet fever, meningitis, smallpox, etc., you will readily see that broncho-pneumonia is a very fatal malady if it causes more deaths than all the infectious diseases.

The disease is most common among the poor where the children are more or less imperfectly nourished, and too, where the sanitary condition of the food and surroundings is not good. But I have seen it in homes of

the wealthy where you could not discover any cause whatever. Though it may arise from purely local infection by irritating agents not specific and not recognized. Old people are very susceptible to this disease because they have a poor vital resistance arising from the various diseases and degenerative changes during their lifetime.

Bacteriology—According to Dr. Cohen, of Philadelphia, the organisms most frequently found in broncho-pneumonia are the micrococcus lanceolatus, the staphylococcus aureus and albus, the streptococcus pyogenes, the bacillus pneumoniæ of Friedlander. It is rare for pure cultures to be found except in the case of the pneumococcus which is most frequently associated with the pseudo-lobular type of the disease, the streptococcus being most frequent in the lobular type. Mixed infection is the rule. The following conclusions are submitted from Wright and Mallory: First, that the primary and secondary broncho-pneumonias have a different bacteriological origin. Second, that secondary broncho-pneumonia is for the most part due to streptococcic infection derived from some sources in connection with the air tubes, throat and mouth. Third, that primary broncho-pneumonia is of pneumococcic origin. Fourth, that pneumococcic inflammation occurs with almost equal frequency in the child and the adult. Fifth, that pneumococcic inflammation takes a different form in each; in the adult, producing massive consolidation, and in the child disseminated patches of consolidation. In the acute pneumonia of childhood bacteriology demonstrates that the pneumonia of infancy can in no sense be considered a specific disease, in the sense that it is due to any special organism, as similar, if not identical, pathological changes are produced in the lung tissues by various organisms.

The reason why the same infection that produces a

broncho-pneumonia in infants should produce a fibrinous pneumonia in adults or in children over five years of age, is explained by the fact that the alveoli of the lung are not fully developed until about the fifth year of extra-uterine life. Broncho-pneumonia is essentially the pneumonia of infancy.

Symptoms—The symptoms in broncho-pneumonia vary in accordance to the severity of the pathological processes. In some cases the general symptoms are so slight that the casual observer may look upon the disease as a simple bad cold. The patient may play about, if a child, or if an adult, may go along attending to his usual affairs without complaining very much.

In cases of this kind there is great danger to allow this condition to go without medical aid. This is not infrequent at the beginning of influenza which may in the end prove severe. The temperature rises gradually, in step-ladder fashion, until it reaches 103 degrees F., or 104 degrees F. It is necessary to use a thermometer each time and not simply guess at the temperature. If the pleuræ are involved, which is usually the case, there is slight pain in the chest.

Now in very severe cases the symptoms are sudden in onset and become quite severe from the beginning; there is great prostration, high fever, rapid pulse, pain in the chest, restlessness, difficult breathing, cough, and perhaps expectoration, though in some cases the cough is at first dry and harsh. In younger children there is often difficulty or even impossibility of expectoration, so that the air passing through the mucus retained in the windpipe gives the familiar rattling sound which is audible even to the casual observer. This condition is some times termed suffocative catarrh. The skin is dry and hot in proportion to the intensity of the temperature. There is

loss of appetite, the tongue is coated and the lips are very red at the beginning of the onset, but later may become cyanotic. Now the temperature in broncho-pneumonia does not run a typical course, rather an atypical course, as in lobar pneumonia. There are exacerbations and remissions and sometimes intermissions which may be marked but they have no regularity. The temperature is usually high in the morning; but it may be that the temperature is postmeridian. It varies with the extent of the lung involved and with the rapidity with which the consolidation is developed. The steady rise in temperature is one of the most valuable diagnostic symptoms of broncho-pneumonia. The pulse becomes small and hard at first, then feeble and compressible and the rate often reaches 140-160. The breathing is shallow and dyspna becomes constant, inspiration is short and the auxiliary muscles are called into play and there is marked expansion of the nares during inspiration. Sordes may collect on the tongue and teeth. Sometimes there is delirium, retraction of the head and tenderness about the back of the head and neck, apparently indicating meningeal complications and I have seen convulsions occur; at other times there is constant delirium with jactitation, and this seems to be rather toxaemic than due to cerebral inflammation. In the case which I wish to report later in this paper I found this toxemic condition in the stage of resolution and it gave me more trouble than any one symptom I had to contend with.

I have seen it run the temperature to 106° F. or 107° F. during a spell of coughing and worry. And now, gentlemen, here is where you have to master the situation and keep the members of the family from turning you off as their physician, for perhaps you have already told the family that the patient was convalescent and

perhaps out of danger. When this sudden rise of temperature is found out by the family with their thermometer, for I always leave one with them, they will immediately send you an emergency call, and you must go and go now. In other words, go by wire, if possible.

Physical Signs—On inspection may be found diminished chest expansion, especially if the case be well marked or severe. The lower ribs are drawn in somewhat and the diaphragmatic depression is deepened.

On inspiration may be found slight increase in vocal fremitus over isolated spots if the nodules are near the surface.

On percussion you will find slight dullness over the consolidated areas. If there is much emphysema the chest may be extra resonant or even tympanitic. Now the diminished pulmonary resonance in broncho-pneumonia may be mistaken for collapse of a lobule or lobe, but, if you will remember, collapse is symmetrical, usually involving both posterior bases. One should percuss in succession over similar areas of the lungs on either side of the chest, for if a spot of dullness on one side has no counterpart on the other, one may be sure that it corresponds to a spot of pneumonic consolidation and not to collapse.

On auscultation mucus rales, having a fine, crackling metallic character, are heard over the spots where there is consolidation or dullness. You can hear these rales in inspiration and expiration. These sounds can be heard more distinctly during and after a fit of coughing or worry. There is increased vocal resonance and perhaps broncophony. Where there is bronchitis you may hear rales all over the chest.

Differential Diagnosis—Broncho-pneumonia may be confounded with acute tuberculosis. Acute tuberculosis

is accompanied by a higher temperature than broncho-pneumonia. Broncho-pneumonia occurs oftenest in children between one and four years; tuberculosis occurs most often in the adult. In acute tuberculosis the exhaustion and emaciation are more rapid. The mind is usually clear in tuberculosis, in broncho-pneumonia it is dull and stupid.

Report of a Case of Broncho-Pneumonia—Jesse W. White, female, age three years, was taken suddenly ill December 14, 1906. Symptoms: Temperature 102° F., pulse rate 120, respiration 35. There was a slight cough present which was dry and harsh, attended by pain in the chest. The tongue was coated, lips red, diminished expansion of the chest, lower ribs retracted, slight increase in vocal fremitus over spots in both lungs, also slight dullness, fine mucous rales and increased vocal resonance. The pulse was small and hard. The next day temperature 103° F., pulse 130, small compressible and feeble, respiration 40, other symptoms increased in proportion to temperature, pulse and respiration.

Diagnosis: Broncho-pneumonia—On December 24th, I thought the patient was convalescent and was about to dismiss it, but it seemed to have a spread of infection, for the temperature went up again.

Other symptoms aggravated. The temperature was higher in the evening than in the morning in this attack, whereas, in the first it was higher in the morning. It was of a remittent type. Patient very much emaciated. Breathing difficult and heart action weak. Auxiliary muscles brought into play. On January 3, 1907, temperature normal all day and night. But on the 4th, the next day, at about 4 p. m. temperature went suddenly up to 106° F., due to toxemia, intermittent delirium with jactitation and fit of coughing. The next night at 12 temperature went again to 106° F. The following night

about the same time it went to 104° F., then to 102° F., and the next night to 100° F., and the fifth night it remained normal. All this was of intermittent type, being normal throughout the day with the sudden rise at night. Dismissed patient January 17, 1907.

This was a case which I at first considered a typical case of broncho-pneumonia, but later decided that if it was a typical case I would rather treat typical cases.

Treatment—In treating broncho-pneumonia as in most all diseases, we have to treat it on its own individual merits. The general lines of treatment in cases of broncho-pneumonia are very much alike in nearly all cases. If it be a severe case rest in bed is absolutely necessary. The environment of the patient must be looked after. The temperature of the sick room should be kept as near 70° F. or 75° F., as possible. The sanitary condition of the room should be looked after. I use a solution of creolin and spray the room occasionally. Plenty of fresh air should be allowed to enter the room by opening the windows from above and below. If the windows can not be manipulated as you would like to have them, you can devise other means of allowing fresh air to enter the room by screening the doors, having them partly open. In this way you get the oxygen which the patient needs above everything else.

There are so many little details to be considered in the treatment of this malady, that is, in the beginning, especially, that I fear I might bore this body of intelligent men, representative men as you are, by discussing it in detail.

There is no disease which I am called upon to treat that requires more patience than broncho-pneumonia. Hence, I might say in passing that I have entered into the task of telling you how to treat this disease without first considering perhaps the seriousness of it.

Now, of course, you want your patient to be as comfortable as it is possible to make him or her, and this you must superintend yourself. The position of the patient should be changed frequently, but not often enough to worry the patient, as you will find they like to lie one way or the other all the time.

Now as to the external remedies or appliances as the case might be, I use a cotton jacket with a chest piece of flannel and upon the flannel a few drops of turpentine.

I have used a poultice of antiphlogistine but I can not vouch for it as doing much good, but I do not think it does any harm. Some doctors use a hot mustard bath, claiming that it attracts the blood to the surface of the body from the lungs. I have never tried that remedy but it strikes me as being a very good one.

I do not believe in blistering, for it weakens the patient, and then you have another job on your hands to cure the sore, if it become infected.

In the case, which I have in a feeble way reported to you, I used cold water to reduce the temperature when it ran to 106° F. Nothing could at that time take the place of cold water. I sponged the patient for at least twenty-five or thirty minutes with my own hands—face, arms and legs to the knees. In this way I reduced the temperature to 102, and when I get to the internal remedies I shall tell you what I gave internally in this particular case.

Some of you may, perhaps, differ with me with reference to the use of cold water externally, but I have never seen any ill effects from the use of it as yet. I am like the good old doctor who said that "He believed in water, internally, externally and eternally." Cold water is, in my opinion, the best external remedy in any febrile condition where the temperature runs above the danger point,

which is 103° F. I do not believe in giving the usual antipyretics internally to reduce the temperature when you have a long-continued case of fever.

Now, as to the internal treatment of broncho-pneumonia. Very few cases are primary, while the most serious of causes of secondary pneumonia are diphtheria, whooping-cough and measles. As the disease has no limit, runs no regular course, the preservation of vital resistance, by not upsetting the stomach and disturbing the child, is of the greatest concern. I believe in using drugs in the treatment of this disease, but I watch the stomach and try to take care of that by just giving medicines that, in my judgment, are necessary.

The bowels must be moved once a day, and, to begin with, I usually give that old and reliable remedy, calomel, in small doses. There is no drug which will take the place of calomel in broncho-pneumonia, if followed by oil or salts. If there is much restlessness or pain Dover's powders may be given, watching the stomach and bowels. It is liable to nauseate on account of the ipecac contained in it, and it is liable to stop the secretion or excretion of the bowels on account of the opium.

I do not use heart stimulants early in the disease at all, for they are not indicated until the pulse becomes rapid and irregular.

If you begin with heart stimulants early, you will have to gradually increase the dose until perhaps you may not get the effect as if they had been left off until they were actually needed.

The heart stimulants I employ are tinct. strophanthus, strychnine, and for a general stimulant brandy or rye whisky.

I do not use tinct. digitalis in the acute stage of broncho-pneumonia, for it has no place in acute febrile condi-

tions; it also upsets the stomach in children. Its place is in chronic affections where there is little or no fever, as in heart disease and kidney troubles. Tinct. aconite and Norwood's tinct. of veratrum viride are used by some physicians with good success. For the cough I have been using for the past four or five years creo-terpin comp. diluted with syrup tolu.

I use this combination of creosote, terpin hydrate, calcium and sodium glycero-phosphate, heroin-hydrochloride, in the beginning of the treatment. Sometimes I use ammonium carbonate or ammonium chloride put up in a palatable form so that it will not irritate the stomach. I never use either of these preparations until the stage of resolution begins, for you do not need a stimulating expectorant until late in the disease.

Now as to internal antipyretics, there is but one that I ever use, and that is the sulphate or the bisulphate of quinine.

In the case which I have reported I used the sulphate of quinine when the temperature went to 100° F. in connection with the cold water.

When I found out about the usual time for the temperature to rise I gave three grains four hours before the time for it to rise, and then another dose when the temperature started up.

Quinine can be given very well in syrup of yerba-santa. For the delirium and jactitation I had to resort to the bromides put in an elixir lactated pepsin. Now as to nourishment, this is perhaps the most important item in the treatment of broncho-pneumonia.

There is usually no appetite to eat anything or drink anything of a nourishing nature, and we sometimes are at a loss to know just what nourishment to give. Of course, it should be a liquid nourishment, something that

is easily assimilated. A concentrated nourishment predigested, such as pancreatized milk, liquid peptonoids, panopepton, egg albumen, soft-boiled egg, and the like. Of course you will have to change from one to another, as the patient will soon get tired of one kind of nourishment. All nourishment should be given as it is given in febrile conditions generally. When my patient is convalescent I put him on a tonic of some kind, as elixir iron, quinine and strychnine, for a few weeks, until he is well again.

TETANUS.

BY J. A. CROWTHER, M.D., SAVANNAH.

Tetanus is one of the most fatal diseases with which the human race is afflicted.

Death from this infection is so horrible in all its features, not only for the patient himself, but also for his family and friends; so little can be done by physician and nurse to mitigate his sufferings, which must be excruciating beyond the power of words to express when in the paroxysms bones are broken and muscles are torn asunder; tortured by hunger and thirst which he is unable to allay, and through it all—all this frame-racking agony—to have to smile as if it were a joke, that there is, perhaps, no man who has once seen the frightful picture but would choose, if possible, any other mode of taking off.

Tetanus and diphtheria stand out as the only two diseases in which, thus far, the specific bacteria producing them have been discovered and their antitoxines obtained.

While we are certain that measles, scarlatina and some others are germ diseases, the bacteria producing them have not been isolated, and no specific treatment is known; while in tuberculosis, though the pathogenic agent is known and has been very minutely studied, as yet no satisfactory antitoxin has been found, notwithstanding the enormous amount of labor that has been expended in seeking one.

In spite of all the fanatical opposition to vaccination, we still resort to this method of protection from smallpox, though we must acknowledge entirely empirically.

As might be expected, a disease of such striking symp-

tomatology would not escape the observation of the ancient physicians, and their descriptions of its course in man compare more than favorably with those of thirty years ago, or even later. For instance, in the 1886 edition Strumpell's Practice one reads such expressions as these:

"This (tetanus) has been most frequent in time of war, and is in part due to the unfavorable influence of certain external circumstances, such as bad weather or bad hygienic surroundings"; and, "Tetanus may be associated with either slight or severe injuries, whether treated carelessly or kept aseptic." Hippocrates himself could hardly have further missed the mark!

Now, this was written a year after Nicolaier had discovered the bacillus of tetanus, and I quote it to show that practically all the knowledge now possessed of the real nature of the disease has been obtained since that time; indeed, one might say that, with the exception of having found the bacillus, since 1889 or 1890.

After Nicolaier discovered the bacillus, in 1885, he, with many other investigators, began a series of experiments to discover the nature of the products of their metabolism and to study their action and effects, both chemical and microscopical, upon the tissues and fluids of susceptible animals after they had been inoculated with the bacillus.

By injecting mice, rabbits and guinea-pigs with the bacillus which he found in garden earth, he was able to produce in them the well-known symptoms of tetanus, and also by inoculating other animals with the bacilli which he found in the pus at the points of injection of the first, he also produced tetanus in them. He did not, however, succeed in obtaining pure cultures of them.

It remained for Kitasato to discover—about 1889 or

1890—a method by which he succeeded in obtaining pure cultures, which consisted, in the main, in keeping the culture media free from oxygen, thus demonstrating the anaerobic character of the bacillus.

Theobald Smith has succeeded in demonstrating, however, that occasionally the bacillus may be grown in mixed cultures under aerobic conditions, but explains it by supposing that the oxygen is used up by the other bacteria present.

The bacillus is a small, slender rod, with rounded ends, except in the spore-producing stage, when it has at the end, where the spore is produced, a bulbous enlargement three or four times the thickness of the rod, which has suggested the name "drumstick" bacillus.

Even this, however, is not uniform, as a spore-form has been obtained without the bulbous end.

The bacillus is exceedingly resistant to external agencies, such as heat, chemical substances, etc., and particularly so is the spore. This characteristic is made use of in obtaining pure cultures. Several tubes of glucose-agar, glucose-gelatin, or blood serum, are melted and kept at a temperature of 100°C. These are inoculated by the stick method with the suspected material, and the tubes again placed in boiling water for periods varying from one-half to five or six minutes. They are then placed in cold water until cold and then incubated at 37° C.

It is generally found that in one or more of the tubes all the other bacteria are killed, and the tetanus spores develop in pure culture. The toxin forms readily in the culture media, and is easily obtained from the filtrate.

They found that this toxin when injected into susceptible animals produced the characteristic phenomena of tetanus, and this was a triumph for those who had long held that the bacilli did not involve the blood and organs

of the body, but that the phenomena were produced by their toxins manufactured at the site of the wound, from whence they pass into the body. By what route do they pass into the body? Meyer claims that they pass upward along the nerves, but Behring holds that they first enter the lymph channels and *then* the circulation, and that they are not taken up directly by the capillaries of the blood.

Now came the search for the distribution of the toxin in the organism, and the natural inference was that it was in the blood; but the blood of persons dead of the disease was injected into mice without producing death, which showed that at this stage, at least, practically no toxin is in the blood.

Then the organs of persons and animals that had died of the disease were analyzed and found to contain either none or only insignificant traces of the toxin.

But it *was* found in the blood of animals for a longer or shorter period after injection, which showed that it must be taken up from the blood-stream on its way through the body.

In 1898 Roux and Borrel reported in the Annals of the Pasteur Institute in Paris the results of a series of experiments which they made at the Institute. This report was reviewed by Rambaud in the New York Medical Journal, and I give it in part in his own language: "They took a portion of the brain substance of a guinea-pig and crushed it with some tetanus toxin and centrifugalized the mixture, separating it into two layers, the upper of which was a fluid, the lower the mucous substance. The upper layer they found to contain little or no toxin, the lower—the mucous substance—practically all the poison. They assumed that what took place in the experiment is what takes place in the organism—the toxin is taken up by the nerve-cells or nervous substance.

"According to Marie," says Rambaud, "the poison reaches the nervous centers by two routes; a part follows the course of the nerves and is fixed by the cells of the spinal cord; it is for this reason that in animals the contractions always begin in the region in which the injections have been made, and in man generally in the wounded part; another portion of the poison enters the blood, whence it is extracted by the nerve-cells; thus the cells of the cerebrum can be affected by the toxin brought to them through the circulation.

"Furthermore, Roux and Borrell found that when the toxin was injected directly into the brain of guinea-pigs, the dose required to cause tetanus was much smaller than when a subcutaneous injection was made. Cerebral tetanus results from the former, owing to the nearly immediate fixation of the tetanus poison."

Rabbits immunized against tetanus and resisting the hypodermic injection of a several times mortal dose of the toxin, succumbed after having received into the brain a dose which, if introduced into the thigh of a fresh rabbit, would not even have caused local symptoms. On the other hand, a dose of toxin capable of giving cerebral tetanus failed to cause it in a fresh rabbit after one drop of blood of one of the immunized rabbits, taken at the time of the intracerebral injection, was added to it; the immunized rabbit itself died as the result of the intracerebral injection of toxin.

Borrel and Roux from these experiments concluded that "the tetanus antitoxin, when injected into animals, remains in the blood, whereas the toxin is extracted from it and fixed by the nerve-cells.

"The antitoxin does not come in contact with the poison, and the two substances, though so near each other, fail to meet. The serum is efficacious against the toxin which

is placed under the skin because the greater part of it enters the blood, but it proves powerless against the poison that has already reached the nervous elements."

This is why in man, as well as in animals, the subcutaneous and intravenous injections so often fail. When they are resorted to, the nervous system has already fixed a smaller or greater quantity of toxin, and, while the antitoxin thus administered neutralizes the toxin circulating in the blood and limits the poisoning, it does not reach that which is attached to the spinal or cerebral cells. When the intoxication has advanced too far, the toxin diffuses from one nerve-cell to the next, protected from the antitoxin, and the disease runs its course.

After it was determined that the substance of the central nervous system of susceptible animals contains products which have a selective affinity for the tetanus toxin, the question arose as to how these substances acted toward the poison. Some believed that they merely fixed the toxin in the nerve-cells, thus producing the disease, and by such union constituting the morbid process, while others believed that they were a preformed antitoxin of the nerve-cells capable of neutralizing a certain amount of the poison generated by the bacteria.

The latter view is in accord with the theory of natural immunity.

Jacob proposes to call this "tetanoid substance." This toxin-combining substance is present in the central nervous system before the animal is attacked by tetanus, and is, therefore, called the "preformed tetanoid substance," or the *haptophorous group,* of Ehrlich.

After the cells have thrown off these first haptophorous groups, which have combined with the toxin, into the circulation, the cells, under the stimulus of the poison, produce an additional supply of the tetanoid, or toxin-

combining substance, and with this the toxin coming from the point of injection combines, forming new haptophorous groups. Jacob calls this the "pist-formed tetanoid substance." As the disease progresses this post-formed tetanoid substance is excreted in part by the nerve-cells and reaches the circulation.

According to Ehrlich, this portion of the tetanoid substance is the natural antitoxin produced by the organism itself during the course of the disease; that it takes up from the circulation the toxin constantly formed by the bacteria, paralyzes it and thus prevents it from pairing with the toxin-binding substance in the central nervous system.

That this antitoxin is retained in part in the nerve-cells for a longer or shorter period before it reaches the circulation is shown by the fact that animals could be protected from a many-times fatal dose of the toxin by injecting into the circulation an extract of the nerve substance of animals that had died of tetanus.

In this connection it may be mentioned that the antitoxin, or a substance closely related to it, is formed outside of the animal body, for if the brain and spinal cord of susceptible animals are rubbed up with normal salt solution and the toxin added to the mixture and this is then injected into a suceptible animal, and then an otherwise fatal dose of the tetanus toxin is injected into the same animal, the symptoms of tetanus do not occur. It is evident that sufficient antitoxin must have been produced in the mixture to take up and neutralize in the circulation the injected toxin.

It might be suggested that the nerve substance uncombined with the toxin in the mixture had fixed the injected toxin circulating in the blood just as the nerve-cells do in the living animal; but Ehrlich showed that if such a

mixture of brain and cord substance, which does *not* contain the toxin, be injected it does not protect the animal from an injected dose of the toxin.

Jacob says: "If the effort is to be made to immunize animals or man against tetanus infection by the process of brain-mixture injections, this mixture must first have added to it tetanus toxin prepared outside of the animal body, the post-formed tetanoid substance (antitoxin) must be produced by this outside of the animal body, and this preparation injected into animals that are to be protected."

While this method is available, since the necessary toxin can be developed in culture media, in practice the antitoxin in use is that obtained from the blood-serum of horses in which it has been developed by injecting the tetanus toxin into the animals.

In the production of the serum the horse is injected with a dose of toxin which produces tetanus, but without killing him.

In succeeding weeks the horse is injected with increasing doses of the toxin, which results in the production of large quantities of antitoxin in the blood.

Up to a few years ago the subcutaneous injection of the antitoxin in doses of 10 to 20 cc. was the only method in general use; but after the experiments of Roux and Borrel, above referred to, showed that the toxin at the time that tetanic symptoms develop is already firmly anchored in the central nervous system and beyond the reach of the antitoxin which is circulating in the blood, two other methods of injection were devised in the hope of neutralizing the toxin already fixed by the central nervous system, and to prevent its further diffusion from cell to cell. These were the intracerebral, or injection of the antitoxin directly into the cerebral hemisphere, invented

by Roux and Borrel, and which I shall further describe; and the subdural, by Jacob, after the method of Quincke's lumbar puncture, into the subarachnoid space.

By the subdural method the Quincke needle is passed between the third and fourth lumbar vertebra into the subarachnoid space, 5 to 10 c. c. of the cerebrospinal fluid is allowed to run out, and while it is still oozing the antitoxin syringe is screwed in, the serum is injected slowly, drop by drop, up to 10 or 20 cc.

The needle is removed and the opening closed with collodium. It is better, and may be necessary, to chloroform the patient during the operation.

In the intracerebral method the injection is made into the middle convolution of the frontal lobe, thereby avoiding the motor centers. At a point about two and a half inches above the external angular process of the orbit, and about an inch and three-quarters from the median line, a hireshoes flap, including the pericranium, is raised and a small trephine opening made in the bone; a long, fine hypodermic needle is pushed into the brain at right angles to its surface about two to two and a third inches, and from 3 to 5 c. c. of antitoxin slowly injected.

The injection should be made into each hemisphere. The operation has, of course, to be done under general anesthesia. The operation is simple; I did it several years ago on a patient I saw in consultation.

The patient was a young negro man, who had run a rusty screw into the sole of his foot some ten or twelve days previously.

He was in marked opisthotonos, with severe spasms recurring every twenty or thirty minutes, chest and abdominal muscles rigid, and in the midst of a severe attack of traumatic tetanus.

Indeed, he had one or two spasms while under the

anesthetic. I injected about 5 cc. of antitoxin and put him to bed. This was in the afternoon, and he had no further treatment until the next day. The next day we found that he had had no convulsions after the operation.

Finding we could get no more antitoxin in the city with which to carry out the subcutaneous injections, we put him on liberal doses of chloral hydrate.

He lived eight days after the operation, swallowed liquids with ease, and died of exhaustion, without having had another convulsion. A wet bichloride compress was kept applied to the wound in the foot.

Now, as it is well-known that the negro is not only highly susceptible to tetanus, but succumbs easily to it, and the disease in this case was far advanced, and we could not not follow up the intracerebral with the subcutaneous injection, as should have been done, I regarded the subsequent course of the disease as indicating a very favorable effect of this method of using the antitoxin.

While fully aware that this method, so successful in the animal experiments, has not proved all that was hoped for it in man, yet I believe it has great merit when resorted to early in the disease. I have not been able to rid my mind of the belief that we would have saved this man, even at this late stage of the disease, if we could have carried out the treatment as suggested by the authors.

Many successful cases have been reported, but in practically all of them the treatment was instituted early, for all concede that after the vital centers in the medulla have been attacked nothing will save the patient.

Many successful cases of the subdural injection have been reported, also one of puerperal tetanus, by Jacob, notwithstanding this form of tetanus is regarded as having a mortality of almost 100 per cent. Van Leyden believes this to be the best of all the forms of treatment.

Still another method of using the antitoxin has been developed by the experiments of Dr. Calmutte, of Lille.

While the antitoxin is not absorbed from the unbroken skin of mucous membranes, he showed that it is readily absorbed from denuded surfaces, and that when the dry serum is dusted on wounds it is absorbed and confers immunity on animals. Dr. McFarland, of Philadelphia, following the method of Dr. Calmutte, obtained similar results, and one of his experiments showed such striking results that I give it in his own words: "Sixteen adult guinea-pigs were employed. The abdomen of each was shaved, and with a sharp scalpel the skin was cross-hatched, as in performing the operation of vaccination, and an era of about one cm. in diameter was abraded.

With a platinum loop a drop of a pure culture of the tetanus bacillus was throughly rubbed into the abraded surface, and in one-half of the animals the seat of operation was dressed with cotton saturated with collodium; in the other half the abraded surface was thickly sprinkled with pulverized antitetanic serum, and then similarly dressed with collodium. The results were striking. Every animal of the first series died with typical tetanus convulsions, while every one of the second series lived and showed no symptoms."

McFarland then tried the same experiment with equal parts of the antitetanic powder and chloretom, reasoning that the admixture of an unirritating antiseptic would prevent the growth of other germs in the wound.

In this experiment one of the protected animals died; the antitetanic powder was too much diluted by the chloretim, he suggested, and made it less active than the pure dried serum.

Parks, Davis & Co. make such an anti-tetanic dusting powder, and it should be kept on hand by every physician

practicing in the country or small town where other forms of the antitoxin are not quickly obtainable, as it keeps practically indefinitely.

Unfortunately, this method is applicable only to superficial wounds and not to those deep punctured ones, in which, on account of the anaerobic character of the bacillus, the infection is most likely to take place.

This charactertistic of the bacillus is, however, fortunate, for only on this ground can be explained the fact that tetanus is of rather rare occurrence considering the wide distribution of the germ.

It is known that if the bacilli be deprived of their toxicity large quantities of them may be injected into a susceptible animal without producing tetanus.

This is explained by the fact that the leucocytes in the wound, by their phagocytic action destroy the spores of the bacilli; this they fail to do if much toxin is present in the wound. Is it not probable, therefore, that the dry antitoxin being dissolved and acting in the presence of the bacilli and neutralizing the toxin as fast as it is produced enables the lucocytes to exert their phagocytic action and rid the organism of the bacilli?

That the most superficial wounds may furnish the point of entrance of the bacilli and cause a fatal attack of tatanus is well shown by a case I had some years ago in a white man about sixty years old. He was employed about the city stables and was kicked on the back of the hand by a mule, which caused an abrasion of the skin only about as large as one's finger nail. The wound was so slight that he went about his work and took no notice of it. In about a week he developed a severe attack of tetanus and died in two or three days. This would have been an ideal case for the application of this form of treatment.

One of the greatest advantages of this method of treatment is that it requires no operative procedure for its administration, but is simply sprinkled on the wound after it is properly cleansed; another is that in addition to neutralizing the toxin in the wound, it is absorbed into the blood and there combines with any toxin that may have escaped its action in the wound.

I will not take your time with reading statistics, but the literature shows a constantly increasing number of cases successfully treated by some one, or a combination of several of the methods described; and with the general recognition that the successful treatment by any method must be the early treatment, and with the discovery of yet other and perhaps more effective modes of administration of the antitoxin, we may reasonably hope that in the near future this fearful disease, destructive alike to men and animals, will be shorn of its terrors.

A word must be said of the prophylactic use of the tetanus antitoxin, as in this disease it is eminently true that "an ounce of prevention is worth a pound of cure."

While no rational man would advocate the injection of an immunizing dose of antitoxin into every soldier sent into a campaign because tetanus so often occurs in wounds received in battle, any more than he would advise that the appendix should be removed from every child soon after birth to prevent his being attacked later in life by appendicitis, yet every conservative and careful physician will, I am sure, approve the prophylactic use of the antitoxin in those classes of wounds in which tetanus is most likely to occur, such as punctured and lacerated ones, especially those received in gardens, around tables and farm-pens, from exploding fireworks, toy pistols, and the like, as well as in all classes of wounds received in localities where the germ is known to be especially abun-

dant, and particularly where cases of tetanus had already occurred. In these, of course, the subcutaneous injection or the topical application would be the methods of treatment indicated, in addition to a prompt and thorough antiseptic treatment of the wound.

I will tax your patience with only a few words on the varieties of tetanus.

Puerpual tetanus, or tetanus developing during the peurperium, is said to be of very rare occurence, but it is undoubted, as the bacilli have been isolated from the uterine lochia in the course of the disease. Most cases have followed errors of technique in obstetrical operations or examinations, but a case is mentioned by Williams which occurred in the Prague-Lying-in Hospital in a woman in which not even an internal examination had been made. The prognosis is of the gravest character, and with few exceptions no treatment has proven of any avail except the prophylactic employment of the antitetanic serum. This has proven very satisfactory as far as its effects could be estimated. The uterus has even been removed in many cases without the least result. Notwithstanding its rarity, I have had one case. This presented some suggestive features with respect to the possible mode of her infection. The patient was a strong and healthy mulatto woman who had been delivered by a midwife. As far as I could learn, no internal examination had been made; she had only tied and cut the cord after an easy labor, the placenta coming away without interference. As I recall, it was on the third or fourth day after labor that I saw her. It was early in the afternoon and I found her half sitting, half reclining in a rocking-chair, with thighs extended and in well-defined opisthotonos and with marked trismus, but spasms infrequent.

As soon as I could get it I gave her sub. q. 10 cc. of antitoxin. I repeated the dose that night, but when I went

next day she was dead. The antitoxin had not exerted the slightest influence on the disease.

Now, her husband worked at a livery stable, and as the tetanus bacilli are known to be especially abundant about stables, it seemed to me probable that her husband had infected her genital tract before her confinement, and the traumatisms of labor furnished the infection atria for the development of the disease.

Head tetanus differs from the other forms of tetanus in that in addition to the spasms of distinct muscle groups, there is in this form a true paralysis in the course of a nerve, and especially the facial nerve. This form follows an injury to the head or face in the course of the facial nerve.

According to Rose, paralysis of the face constantly occurs on the side of the trauma, and frequently at the onset of the disease.

About two years ago I saw a case of head tetanus with Dr. Van Martin in which the first symptom observed was paralysis of the left side of the face and lower lid. This was followed by trismus, spasm of the pharyngeal muscles and those of the neck, back and abdomen. In spite of treatment and a rather slow course of the disease, it ended fatally.

Rose believes the paralysis to be due to compression in the petrous portion of the temporal bone from swelling of the nerve. The prominence of the spasms of the muscles of deglutition has led authors to speak of it as "tetanus hydrophobieus."

This case is interesting in view of the recent finding of the tetanus bacilli in the mouths of healthy people, because this attack followed some slight operation, I can not recollect what, on the lower jaw.

It is evident that, as observed by Rose, "the paralysis is not in direct connection with the other symptoms of

tetanus, as may be seen from the fact that cases of general traumatic tetanus occur in connection with wounds of the head without facial paralysis occurring as a complication."

I saw a case some years ago in a man who was hit in the head by a brickbat hurled in the dark. The missile struck him just above the right frontal eminence, laying the tissues open to the bone. The man died of general tetanus, but no facial paralysis occurred.

Tetanus neonatorum, or tetanus of the new-born, is due of course to infection with the tetanus bacillus, but it runs a course modified by the age of the child, being highly fatal in all cases, but in cases developing between the sixth and tenth day, showing a mortality of quite 95 per cent.

Indeed, so high is the mortality that many authors doubt the advantages of attempting any treatment at all in these cases beyond chloral and bromidia by the rectum.

I have seen two cases of this form of tetanus in the last two years or so, both being in children of a former driver of mine. Both died in the sixth or seventh day, and both had been delivered by the same midwife. The same symptoms were observed in both; both stopped nursing, the second one with a cry, due doubtless to a painful spasm of the masseters. Neither showed the slightest response to treatment, and neither lived over thirty-six hours after the outset of symptoms.

Some one has said that in tetanus the development of symptoms is the beginning of the death of the patient, therefore, only the earlier symptoms and the differential diagnosis will be touched upon, as upon a prompt diagnosis, whatever therapeutic measures are adopted, depends the life of the patient.

In about a week or ten days after the injury—and this

may be so slight as to escape notice—the patient feels a slight stiffness in the muscles of the neck and those of mastication with also a slight rigidity and tension of the muscles of the face.

This rigidity slowly extends to the muscles of the back and that of the masseters increases until the patient can no longer open the mouth, and the disease is established.

Diagnosis—In meningitis, there is rigidity of neck and back and contracted pupils, but also headache and impairment of consciousness, with no trismus; in strychnine poisoning, extremities chiefly involved, no rigidity between paroxysms, symptoms reach their maximum in the first hour and the patient dies or they gradually subside.

DISCUSSION ON DR. CROWTHER'S PAPER.

Dr. J. G. Jarrell, of Savannah: I have listened to Dr. Crother's paper with a great deal of interest. It has been my misfortune to have had a number of cases of tetanus, and I have found them almost universally fatal. I have seen but one case of tetanus that recovered, and I will report this on account of the severity of the initial wound.

A young man at Thunderbolt shot some ducks as they were flying across a marsh. He saw the ducks drop. He took a boat, rode across, and the boat got stuck in the mud or marsh. The mud was about two feet deep. He got out of the boat, and in so doing rolled over in such a way that his gun exploded, both barrels striking him in the thigh. The contents of the gun ranged upward and backward. The hole of entrance was a little larger than a dollar, while the left buttock was literally torn to pieces. In falling, the wound was filled with marsh mud. I dressed the wound with moist bichloride of mercury dressings. Everything went nicely until the eighteenth

day, when the young fellow developed marked symptoms of tetanus. I knew Dr. Crowther had been using the antitoxin of tetanus, with unsatisfactory results, and I thought I would give him large doses of bromides and chloral. This I did, and in ten days the symptoms of tetanus disappeared, and he made an uninterrupted recovery. I believe the average negro will die when he has tetanus; also the great majority of white people will die if infected with this disease. The only chance is where the infection is so slight that the symptoms after the fifteenth or eighteenth day disappear, then there is a good chance for complete recovery; but in every case, when the convulsions come on before the tenth or twelfth day, the disease usually terminates fatally,

Dr. A. P. Taylor, of Thomasville: I treated a negro for tetanus some twenty or thirty years ago. He had the most violent form of the disease I have ever seen, although he recovered. It is the only case of tetanus I have ever seen recover.

A Member: What did you do for the patient?

Dr. Taylor: I gave him immense doses of chloral. This was when chloral first came out. I think I gave him nearly an ounce in twenty-four hours.

REPORT OF A CASE OF VINCENT'S ANGINA.

BY T. E. OERTEL, M.D., AUGUSTA.

My purpose in reporting the following case is to put on record the occurrence of this rare disease in Georgia.

At the same time it may prove of value in that probably the disease may occur much more commonly than is supposed and the true cause of the condition pass unrecognized.

Vincent's angina is also called ulcero-membranous stomatitic or angina and diphtheroid angina.

It is a disease affecting particularly the tonsils and uvula, less commonly the oral and pharyngeal mucosa or lips. It is characterized by the formation of a superficial membrane and in marked cases necrosis extending into the submucosa.

The course of the disease is decidedly chronic with a tendency to remissions with recurrence when treatment is suspended or the general physical condition of the patient is below the normal standard.

Vincent was the first to describe the etiologic factor which has since borne his name. This fusiform bacillus and spirocheta of Vincent is an interesting organism of dual morphology, as the name implies. Efforts to cultivate either form have so far failed. The bacillus is 5m. to 10m. in length and .0 6m. in thickness at its widest point and most of the forms have distinctly tapering ends which often terminate in a sharp point. It is immotile and stains by Gram's method.

The spirocheta is actively motile, varies in length from 10m. to 30m. and decolorizes by Gram's method.

Both of the forms are easily stained by the aniline dyes but the spirocheta is pale in color unless a mordant is used. Carbol fuchsin gave the best results in my hands.

In France and Germany a number of cases have been reported, in England only a few have been observed, while in America the disease seems to be very rare. The literature at my command is unfortunately not sufficient for me to state the number of cases observed in this country, but the text-books either do not mention the condition or give it brief notice.

September 7, 1906, Mrs. E. C., aged thirty-seven, presented herself for treatment with the following history: For past three years has been in poor health and has had repeated attacks of sore throat, which, in fact, has never been entirely well. She has been under treatment of her family physician during this time and states that she comes to me only on account of his present absence from the city.

When the attacks come on there is usually a marked swelling of the glands of the neck upon the affected side. Pain is intense and for days she is scarcely able to swallow food. Always has considerable fever. The throat becomes ulcerated and the breath offensive. She has been told the trouble is tubercular.

Until recently only the left side has been involved. Upon the left there is now little soreness, the chief trouble being with the right tonsil which has been ulcerated for some weeks.

Inspection of the neck shows the right cervical glands are enlarged to such an extent as to form a tumor mass extending from the angle of the jaw to the clavicle. The tumor is tender to the touch, hard and shows no fluctuation.

Upon the right tonsil there is a ragged ulcer about two

centimeters in diameter, the sides of which are irregular, the base moth eaten and the entire surface covered with a thick, pseudomembrane, yellowish, tough and adherent. When this is removed the underlying surface bleeds slightly and is raw and granular.

Upon the left side the mucous membrane is thickened and the tonsil enlarged. In the left tonsil there is a deep fissure, the site of the former ulceration.

The mucosa of the pharynx shows no ulcerations but is hypertrophied and hyperemic.

Smears from the ulcer and also from the fissure show the characteristic organisms of Vincent's angina.

Treatment with antiseptics locally and a tonic mixture caused a rapid healing of the ulcer, and with its disappearance the glandular symptoms subsided. At the end of two weeks the patient was sent to the country. Upon her return she passed again under the care of her family physician, Dr. Holliday.

Through his courtesy I have been able to recently examine smears made from her throat. The spirochaeta of Vincent are still present although Dr. Holliday informs me there are now no ulcerations and the general condition of the patient is vastly improved.

DISCUSSION ON DR. OERTEL'S PAPER.

Dr. James H, Crawford, of Martin: Mr. President: This subject of Vincent's angina is one I know very little about, and if you, gentlemen, are as ignorant of this subject as I am, when we go back to our homes we will look up the subject in our medical books and find out something with reference to it. It seems from the paper that Dr. Oertel has presented that it is a disease of importance, although very rare, and it requires a man of intelligence to present the subject to

this or any other association. Therefore, I wish to thank Dr. Oertel for his excellent paper, because I feel that I have been amply repaid for coming to Savannah from the northeastern part of the State to listen to him.

A Member: I would like to ask Dr. Oertel whether he thinks the disease is contagious?

Dr. Oertel (closing the discussion): It seems to me that this is a disease of some importance. Unfortunately the literature I had access to gave me practically no knowledge of the subject. I endeavored to get some of the foreign medical journals, as the *London Lancet,* for instance, and one of the German periodicals in which these cases had been reported, but was unable to do so. It is one of the things we suffer from in Georgia, namely, not having a good medical library to which we can have access.

There is no question about the diagnosis, for the reason that these organisms are very distinct. I had no idea what was the matter with the woman. She had been treated for a tubercular condition of the left tonsil, and I expected to find tuberculosis, and when I looked at her throat and found a dirty, ragged ulcer on the right tonsil, I thought I had a tubercular lesion, too chronic to have been syphilitic. The first thing I did was to make a smear, and the minute I looked at the smear I found spirocheta and a fusiform bacillus, and the two occurring together are absolutely diagnostic of Vincent's angina. No one could possibly make a mistake.

The etiological factor seems to be proven by finding this organism; but whether it is an animal parasite or a vegetable parasite, we do not know. That question is as yet undecided. It may be one or the other. Whether these two forms simply occur together and are one and the same, we do not know. They have not been cultivated, and nobody seems to know anything about it.

The important thing is this: Here is a case which has occurred in Georgia. If there is one case that has been diagnosed as Vincent's angina, there are probably others, and in looking back over my own experience I can recall two or three cases which were, in all probability, Vincent's angina, but which I mistook at the time for something else. A couple of them recovered under antisyphilitic treatment; a couple of others were tubercular.

It is well for us to be on the lookout for this particular condition. Whether or not it is regarded as being curable, I do not know. This patient has not recovered, and, at any rate, it tends to chronicity, and in some cases a serious throat lesion is produced.

I do not know whether it is contagious or not. There is nothing in the literature regarding its contagiousness. In fact, the only thing I could find were some allusions to contagion by the pathologist, and those only in the more recent cases, so I am practically ignorant of the subject.

REPORT OF FIFTY DWELLINGS INFECTED WITH TYPHOID FEVER.

BY W. P. WILLIAMS, M.D., BLACKSHEAR.

I would have been more accurate probably had I designated my paper "A Report on Fifty Dwellings in Which Typhoid Fever Occurred."

I have selected these homes indiscriminately from among white residents. With the exception of only three, no fever has occurred in them within the last two years. Of these, sixteen were isolated country dwellings, and thirty-four were in town.

When one or more than one case developed at the same time, it is treated as one infection. This has been a rare thing in my experience, occurring but twice, as I can recall it. The usual course being one case following another in succession, the succeeding cases probably contracting the disease from the next preceding.

Out of fifty, thirty-one ended with one case, there having been no fever succeeding in the years following. In one, three cases developed in the summer following an epidemic in the family of a former resident, but no cases have occurred in that house since, though susceptible material has been furnished every year since. This seems to indicate that, given infected premises, the disease dies out within one year, provided no fresh infection is added.

Of the nineteen remaining, five developed two or more cases the same season.

Eleven developed cases in following season.

Three developed cases in more than two seasons.

Of the sixteen country dwellings, fourteen ended with the one case, one has developed one case each season for three years; the other, one case succeeding the other that same summer.

Of the thirty-four town dwellings, there has been but one case in twenty.

Two or more cases the same season in five, leaving nine dwellings that developed cases the succeeding years.

In the isolated country dwellings 87 per cent. were stamped out with the one case and over 93 per cent. the first season. In town 59 per cent. ended with one case. 73½ per cent. of the first season and 16½ per cent remained infected in subsequent years.

It will be observed that there is in favor of country dwellings ending with one case 28½ per cent., of outbreaks ending in one season about 20 per cent., and of dwellings infected from year to year about the same percentage. In other words, one out of every five infections in town is due to environment, bad hygiene on the part of the neighbors.

There is a widespread delusion that typhoid infection occurs through water contamination almost alone. So fixed is this conviction that other causes more apparent and real are practically ignored.

Typhoid fever is not limited by seasons or temperature, and there is no reason why, considered in itself, it should prevail in the summer or fall any more than the winter and spring, and if wells were the source of infection, clearly we would have proportionately as many cases in one season as another. As a fact, it is a rare thing for typhoid fever to occur in winter, yet well water is used winter as well as summer.

The first isolated cases occur in the latter days of May and the month of June. The outbreak and prevalence, in

general, if the disease is during the months of July, August and September, ceasing with the first cold snap or pronounced frost. Evidently there is some cause to produce this almost invariable phenomenon. Its advent is common with that of the house fly, the dipterous species, called by naturalists musca domestica. It ceases with that insects retirement from active business. It is not reckless theory or idle speculation to presume that an insect having its origin in excrement, should retain a predilection for its earliest diet and as variety and opportunity presents itself, indulge in the indiscriminate luxury of the privy vault and the dining-table, and in passing from one to the other, carry any infection that might be present in the one, depositing it upon any article he may settle upon on the other.

In isolated country cases, the conditions are ideal for tracing the origin of the disease. This is almost invariably found to be a meal or meals taken at some house where fever is or has been prevalent.

Several years ago a child was dying from typhoid fever in a dwelling six miles in the country, and as the custom is, the house was crowded with neighbors, who had stayed for dinner. There had been no fever anywhere in the community, but a few weeks prior, the mother had taken this child on a visit to her parents fifteen or twenty miles distant, and had stopped all night at a friend's where there was a case of continued fever, and where one had died the year before from so-called typhoid-malarial fever. Within three weeks, three cases developed out of the company present that day, but alarm stopped the custom of dining with the sick, and through care the outbreak ended with these cases.

I believe that it is an accepted truth that typhoid fever will not live indefinitely outside the human host. It re-

quires lodgement in the human body to retain its vitality and virulence. In my judgment a given infection may last from fall to the following summer, or about a year, and if there is no fresh accession to the infection, it dies out completely.

Human excrement then is the source of typhoid infection. The house fly that lays 140 eggs in excrement, when they are hatched into full grown flies in seven days, transport it. Any effort at prevention must be directed at these two things.

Incineration is the ideal solution of the night soil problem. Were it possible in each habitation to have an incinerator, and have it properly used, typhoid fever would soon be a thing of the past. In my country work, where I have been most successful in blotting out the disease, more than 87 per cent. ending with but one case and only one dwelling remaining infected in subsequent years, I have approached this method.

The night soil is quickly disposed of on a burning log heap; soiled linen immedinately boiled for two hours before being laundered, and all dishes and utensils of every kind about the sick kept separate from those used by the family. When you consider the factor of carelessness and indifference so often shown for the physicians advice along this line, it would not be too much to say that had he the authority to enforce these regulations, 100 per cent. would have ended with one case.

In town (and I mean town where there is no sewerage or partial sewerage systems, where the night soil accumulates in the vaults, and is then buried in the garden or carted out of town) the problem is more intricate and properly belongs to the health department, for whatever zeal one household may exercise in preventive measures, may be wasted on account of a careless neighbor. If

we are to have the privy vault, it should be inaccessible to flies, or if open, then its contents should be kept covered with ashes, or some other absorbent, so that there will not be enough moisture to mature the larvae or in any way attract the insect. When removed, it should be buried in an open plat, where the air and sunshine will complete its nitrification. In town cases, one to 500 solution of corrosive sublimate may be used to disinfect stools and urine. They remain in solution two hours before being buried.

So far as limiting the production and activities of flies is concerned, dry vaults and dry stables, with wire screens for those who are able to buy them, beginning always with the kitchen and dining-room, will solve that.

To prevent the infection of vaults, we have already seen the importance of disinfecting all discharges from a known case of typhoid fever, but when we remember that living typhoid germs are cast off for weeks by a convalescent, and that there are many mild and abortive forms of typhoid fever, which are never diagnosed as such, but which are just as potent for spreading the disease as the most virulent type, we are confronted with the almost impossibility of destroying all infection, before it passes out of the sick room.

I believe all mild forms of fever should be handled as though they might be typhoid, certainly until a positive diagnosis to the contrary is made. This emphasizes the importance, as previously suggested, of destroying all human excrement.

Typhoid fever is an incurable disease, and likely to remain as such. No improvement in treatment has occurred for a quarter of a century. The many remedies and specifics that have been offered as cures are but evidences of these facts. That it can be easily prevented, I firmly believe.

THE TREATMENT OF TYPHOID FEVER.

BY A. R. SCOTT, M.D., MCDONOUGH.

In presenting this paper it will be my object to describe the treatment I get the best results from after diagnosing typhoid; it is not often that I have the opportunity of watching the steplike rise of temperature and see the typical rose spots on the abdomen, for frequently the patient has been sick for a week or ten days and thinking that there was not much the matter would not send for a physician until, gradually getting worse, was confined to bed; when I first see these patients and from the history with the symptoms present at that time diagnose typhoid, I first give a calomel purge and look after the patient's comfort and the prophylaxis as concerning the other members of the family, we should see that the room is well ventilated and I usually have a disinfectant sprinkled about the room and the stools passed into a solution of carbolic acid and allowed to stand for an hour to insure the destruction of the bacillus. I have the patient bathed at least once a day, whether needed to reduce the temperature or not and the bedding and clothing changed, and should it be soiled from any cause it should be changed and everything kept clean. While this is often impossible in certain ignorant families we should explain the necessity for cleanliness, for then we are enabled to get much better attention for the patient than otherwise. I have the patient use a good mouth wash with a soft brush three times daily and in children have the nurse to brush the child's teeth. This prevents the collection of sordes and at the same time keeps the mouth from being a fertile

source of additional infection. Then I allow only a strict liquid diet, principally beef or chicken soups, egg albumen, buttermilk and thin gruel well cooked. Holding small pieces of ice in the mouth adds to the comfort of the patient, allays thirst and has some effect on the temperature. In severe cases where the patient won't take nourishment I usually give peptonoids in sufficient quantity; I usually let the patient have enough to satisfy, as they do not care for much any way until the fever is gone and then guard carefully against overfeeding, gradually adding the boiled chicken and returning to a solid diet. I notice the stools to see that the nourishment is assimilated and where it is not give diluted hydrochloric acid and pepsin. In typhoid we first have an inflammation of the Peyer's patches in the intestine which reaches its height in eight to ten days, this then undergoes resolution or necrosis and sloughs. The cases of abortive typhoid which occurs, I believe undergo resolution and are soon well. I believe that all typhoid if seen on the onset might be benefited and resolution aided by treatment. While I would not expect resolution in all cases, yet I think the slough would be less and the patient's power of resistance raised, both of which would favorably influence the course of the disease, or certainly modify it; and looking to this end, while I recognize that typhoid is a self-limited disease and that we must treat a patient with the disease, I believe medicines aimed at the primary seat of the disease, the ulcers in the intestine, give the patient a good deal of comfort and lessen the risk, such as an internal antiseptic, and where can we find a better or one that possesses more desirable properties with fewer bad ones than turpentine? I usually give it with castor oil in capsules and give it to meet the indications. I furnish my patients with a small bottle of each, oil and turpentine, a medicine dropper and box of capsules. As a routine I

give two drops of turpentine and ten drops of oil three times daily in a capsule. I prefer the capsule to the emulsion because it is more pleasant and patients, even children, will take it in capsules for a long time without protest and I can't say as much for the emulsion. I use oil with it because it prevents the tenesmus and is a laxative in small doses. The points in favor of turpentine are that in very small doses even it will prevent fermentation and the formation of the resulting flatus and will promote the expulsion of flatus that already exists, thereby lessening the danger of perforation.

There is a catarrhal condition throughout the entire intestinal tract which causes the diarrhea; turpentine is an antiseptic and astringent and if given in ten drop doses after each stool will control this nicely. Sometimes the opposite is the case where we have constipation; in these cases we should give larger doses of castor oil with the turpentine as indicated. I give sufficient to keep the bowels moving two or three times daily. Turpentine given in the smaller doses does not prevent hemorrhage, though I have never seen a severe hemorrhage where turpentine had been given, and it does not occur so frequently, and when we have hemorrhage I give it in ten drop doses after each stool which contains blood. And in patients that had not been taking turpentine where hemorrhages had occurred I have never seen a case where ten drop doses repeated as indicated did not control the hemorrhage. Soon after giving these larger doses of turpentine I always give a purgative, preferably castor oil, and I watch for strangury and at the first symptoms of an irritable bladder I give infusion of buchu. Where turpentine is given the tongue is nearly always moist and rarely glazed, and in cases where no turpentine had been used and the tongue was glazed and dry, after a few days of turpentine these conditions began to improve. I have found that the men-

tal symptoms are not so bad where turpentine is given, there is rarely delirium and when it does occur either in patients who have been taking turpentine or in those where it has been used and delirium is pronounced after a few ten-drop doses the delirium is lessened; it acts as a direct stimulant to the nerve centers and by quieting the nervous system is hypnotic. One of the chief objections to the antiseptic treatment of typhoid is that the infection is systemic. Turpentine is the ideal remedy for the systemic infection from the fact that it is carried all through the body and persons inhaling the vapor have experienced the poisonous effects. In autopsies on persons who had been taking turpentine the brain was found to give off the odor of the drug. It is also a stimulant and prostration is not so great where it is given. After patients have had turpentine three or four days the temperature does not rise so high, though I do not claim that it will cut the course of the disease short, for when seen in the first ten days when the eruption was present, in five cases the temperature came down one to two degrees after three or four days of turpentine and then continued to the third week and gradually descended with marked remissions till the end of the fourth week when it was normal. In three of these cases the fecal matter contained a little blood, thus proving that they were not malarial. Turpentine is also a diuretic, it increases the amount of urine, which is not so highly colored, and this aiding in the elimination of waste products is beneficial. In the section in which I live whether it is due to a malarial complication or not I find that quinine is of a great deal of benefit given regularly throughout the diseases. I also give calomel as needed. In cases where there is nervousness and I can't get the patient sponged I give two or three grain doses of acetanilid, which I find does no harm and frequently acts as a sedative, though

I prefer the bath. Where the temperature goes over 102½, or the patient gets very nervous and restless I have them sponged for fifteen or twenty minutes with tepid water, and where this does not reduce the temperature or quiet the nervousness when possible, I use the bath at a comfortable temperature, slowly adding cold water till the patient gets quiet, then drying thoroughly and putting patient back in bed. Where the bath is not convenient I use the pack, first laying down a rubber sheet to protect the bed, then a blanket, then a sheet wet in warm water in which I wrap the patient stripped and then by slowly sponging the sheet with cool water reduce the temperature and the patient gets quiet, then rub patient dry and put in bed. Where the patient is very weak it is well to give a hypodermic of strychnine before bath or pack and put at hot-water bottle to the feet when using the pack. Often the reaction that occurs after the bath is followed by a warm perspiration and patients will seem brighter, there is a feeling of comfort and the patient will frequently drop off to sleep. These procedures are safe, do not depress the heart, quiet the nervousness and the effects last for several hours; as a result the patient is stronger and in this exhausing disease this is a very important part.

DISCUSSION ON THE PAPERS OF DRS. WILLIAMS AND SCOTT.

Dr. C. L. Williams, of Columbus: The young gentleman who read the last paper on the treatment of typhoid fever is certainly up in treatment. While I hardly think a better line of treatment could be selected than that he has outlined, yet I see greater success in the treatment of this disease to-day than I did thirty years ago.

This is an important question from the fact that all general practitioners, every year of their lives; have ty-

phoid fever cases to treat, and they ought to use, at least, the best and most successful treatment for their patients. I have been convinced, from my experience, that there is danger in giving too much medicine in typhoid fever. Years ago, before we had such preparations as phenacetin, antikamnia, and acetanilid, we used aconite. While it did not reduce the fever so suddenly and effectually as the other preparations, it did keep the fever down to a certain limit, and I want to remark here that you need not fear high fever in typhoid. I have had patients live four or five weeks and recover eventually whose temperature ranged from 101½ to 103. Most of that time it was 103; yet they recovered in good shape by being well nourished. We can not adopt any routine treatment of these cases. If you have a case in which the tongue is dry, hard and cracked, you will find turpentine is a good remedy, because if you give it for a day or two the tongue becomes soft and the patient is in a better condition. I know there is a great cry against the coal-tar derivatives in the treatment of typhoid fever. I have not treated a case of typhoid fever in ten years, perhaps more, without giving phenacetin. I never give it in large doses. I commence with small doses, not more than two grains, and if it does not reduce the fever to 102, then I increase the dose somewhat until it gets there, and keep it up, and have never had any bad effects. Where it is convenient and it is arranged so that you can use it, cold water in the treatment of typhoid fever is useful.

A year or two ago I was called in consultation in a neighboring town where the family had given a history of typhoid fever. A little girl was much worn out, and we were obliged to give the coal-tar preparations, and while the cold bath was opposed, we took the child by force and put her in a tub and invariably the fever was reduced materially. As soon as that was done she was put back

to bed and rested quietly. That was repeated twice a day.

There is no routine treatment of typhoid fever, and no man need expect to get up some remedy that will be *the* thing, that will be efficient in all cases of typhoid fever. In other words, the practitioner has got to look at the symptoms, study them, and study his case. Of the intestinal antiseptics I generally use salol, but I don't believe it does a particle of good. I have never seen any real benefit from it. So I have come to the conclusion that as little medicine as I can give in the treatment of typhoid fever, the better my patients will get along.

Dr. H. McHatton, of Macon: The treatment of typhoid fever is a question of extreme importance and interest to all of us. Personally, I think the tendency in all cases of typhoid fever is to try to do too much. If we accept the present theory of typhoid fever, it is a general infection with a local manifestation. We have got the bacillus typhosus in the blood, in the air, in the urine, and everywhere, and we gain nothing, except possibly depress the patient, by purgation. As a rule, I think the less medicine a case of typhoid fever gets the better it is for that case. There is nothing comparable to cold water for reducing temperature, provided you can get it properly applied.

So far as the movements of the bowels are concerned, I use milk when the bowels are constipated, which is the rule in this country, and not the exception. I give normal saline anemia every other day; laxatives or cathartics, practically never. That is the usual line we pursue at the Macon Hospital, and our last report showed three per cent. of deaths, which is much less than formerly, acording to the reports taken years back.

I have no special objection to the use of turpentine.

There are cases in which you may get some harm from the use of turpentine; you may set up trouble with the bladder or stomach, either one of which will add a serious complication to the case.

One great trouble in handling typhoid fever is that the physician goes very often to the family with the idea of multiple seven in his head. He gets the family imbued with his idea of the seventh, the fourteenth, or twenty-first day, and with these multiples of seven, if the fever does not break the members of the family become restless. It is wise, as soon as you make a diagnosis of typhoid fever, to tell the family that the patient will be lucky if he gets out of his bed in six weeks; then there will not be constant annoyance between the physician and family.

Dr. James H. Crawford, of Martin: I have listened to these papers on typhoid fever with a great deal of interest, also to the discussion of them with reference to the treatment, and wish to put myself on record as saying, at the present time, that typhoid fever will never be wiped out, it matters not what prophylactic treatment may be instituted. If it is incurable, how can it be wiped out? I should like for the doctor to answer that question when he closes the discussion.

With reference to the second paper on this subject, in continued fevers, as we have in typhoid, I never use any of the coal-tar preparations—acetanilid, phenacetin, antikamnia, or any of that kind of preparations—because they only weaken the heart; they cause irregularity of the heart's action, and we frequently hear of bad results from the use of the coal-tar derivatives. But I agree with the venerable gentleman (Dr. Williams) with reference to the cold-water treatment. That is the only remedy I use in reducing the fever from 103 to below that point, which is the dangerous point of the fever.

Dr. Williams (closing the discussion): I will say, in trying to answer the question that has been asked, that if the same zeal that is used in suppressing an outbreak of smallpox, of yellow fever, or any of the infectious diseases, was applied to typhoid fever, we would think as little of it, and that is not only my opinion, but my answer. (Applause.)

Dr. Scott (closing the discussion): I wish to say, in reply to the remarks of the gentleman, I use acetanilid as a sedative, and not for the purpose of reducing the temperature.

Again, in using water, I never put a patient in a bath at the temperature of the body; that would make the patient hotter; I put them in a bath with the temperature of the water, say, at 90, and then I find I have no trouble.

PARANOIA.

BY W. HERBERT ADAMS, M.D., SAVANNAH.

I desire to present, as briefly as possible, and without any fine-spun theories, some thoughts on a form of mental disease which is a very prevalent one, which is wofully misunderstood, and frequently unrecognized until it has reached the explosive stage, when some particularly bold, hideous, unnatural, and apparently motiveless crime stamps the perpetrator as a victim of this mental defect, paranoia. Paranoia has many synonyms, among which may be mentioned monomania, folieraisonante, diefe-ructheit, delusional insanity, fixeidee, washnsinn, etc., monomania being possibly the most common and appropriate one.

Paranoia is most comprehensively and classically defined by Spitzka, who says it is a chronic form of insanity, based on an acquired or transmitted neuro-degenerative taint and manifests itself in anomalies of the conceptional sphere, which, while they do not destructively involve the entire mental mechanism, they dominate it. A more simple definition is that it is a chronic progressive mental disorder, characterized by fixed and systematized delusions; generally of a persecutory or grandiose character.

Etiology: Paranoia is almost always based on some hereditary taint. The patient's ancestors need not necessarily have been insane, but they will generally be found to have been neurotics of some form. Occasionally, the disease may be acquired, but even then, stigmata of de-

generation will generally be found, showing the neurotic taint. The disease occur about equally in both sexes and generally develops between the ages of twenty-five and forty.

Pathology: There are no distinctive pathological anatomical conditions in paranoia. At times there seems to be cerebral or facial asymmetry and other stigmata of degeneration, but frequently, nothing pathological can be found, either in the gross or microscopical anatomy of the brain, though it is possible that there are unrecognized changes in the structure or arrangement of certain of the association fibers or their cell endings.

Prognosis: The prognosis in this psychosis is bad, though occasionally in persons of superior mental powers, the delusions may be corrected, especially when they are of a simple, persecutory nature. The prognosis is said to be worse in cases where the delusions are of an erotic or religious character. Upon the whole, however, this form of mental disease presents one of the most unfavorable outlooks of any of the psychosis. The tendency is for the delusion to become more firmly fixed, more systematized, and for the patient to become more and more dominated by them, finally neglecting their ordinary occupations and giving themselves up entirely to the carrying out of their fixed ideas. There is, however, in most cases, very little tendency to dementia, and many of these cases retain many of their intellectual faculties unimpaired to the last. Many of these cases, as their malady progresses, become extremely dangerous and homicidal, on account of their persecutory delusions. It is for this reason, that the general practitioner should be familiar with this type of insanity and be in position to advise the patient's family of the necessity of most careful watching or seclusion of the patient before the storm

of their wrath breaks on the head of the hapless victims of their delusion. These patients are very rarely suicidal, though there are cases of religious paranoia in which the victims mutilate themselves, and have even been known to crucify themselves in conformity with their delusions. This type, however, generally become religious enthusiasts, reformers or ascetics. It was a patient of this type (Peter the Hermit) who started the crusades which kept Europe involved in religious wars for two centuries. Another case of this type was Joan of Arc. Both were victims of visual and auditory hallucinations of a religious nature. The question as to many paranoiacs are medically, but not legally, insane. hospital as soon as the case is positively diagnosed, is a very difficult one to decide offhand; certainly it is that if they were so secluded, many most deplorable occurrences would be avoided, but until the general practitioner and the laity are more enlightened on the nature of paranoia than they are at present, most of them will not be sent to hospitals until they have committed some overt act, and then, they are far more likely to be sent to prison, tried and hung as ordinary criminals, because many paranoiacs are medically, but not legally, insane. Many of them know perfectly well, the difference between right and wrong in the abstract, but not when it applies to their particular case.

Symptoms: The onset of paranoia is gradual and there is nearly always a prodromal period of depression, and during this stage the initial delusions are born. The delusions are nearly always persecutory or grandiose in character, either one may precede the other, or they may exist simultaneously. These patients, as children, show marked eccentricities; are often morbidly self-conscious, and always intensely egotistical. They have an over-

weaning self-confidence; think they are better and smarter than their companions; that they are possessed of wonderful talent in some particular direction. As they grow up, they find their anticipations unrealized; they fail to attain the heights or position to which they aspire, and to which they imagined their superior talents entitled them, and still believing implicitly in their own innate ability, seek outside themselves to find the cause of their failure. They soon distrust their family and friends and settle on some one as the author of their failure or downfall. Many paranoiacs have good memories and their reasoning faculties are at times, apparently normal, except when concerned with their particular delusions. Some of the greatest poets, musicians, leaders and reformers of the world have undoubtedly been paranoiacs. "Genius is to insanity, near akin," and paranoia furnishes the great majority of the so-called border-line cases, but, as a rule, the paranoiac lacks in mental capacity. His memory is especially retentive only in matters pertaining to himself and his surroundings. Outside of these, it is generally only mediocre, but his constant dwelling on everything connected with himself, fixes in his memory, every episode, no matter how trivial, of his life. The paranoiac as a rule is a facile speaker, a ready and plausible though specious reasoner on any subject connected with himself or his delusions. At times, however, they are reticent and conceal their delusions when they think it is to their interest to do so, and nowhere, is this more forcibly brought out than when they are on trial, either to determine their sanity or for a crime. There is a form of paranoia in which the patient is suspicious of every one. These patients conceal their delusions for a long while. The full-developed case of paranoia, however, is loquacious and aggressive; he never hides his light under a bushel and is ready at all times to prop-

agate and defend his theories, and he feels and frequently evinces in no uncertain manner a profound contempt for the person who can not or will not acquiesce in his theories. The paranoiac's delusion generally partakes of a persecutory, ambitious, religious or erotic nature, or there may be a combination of two or more of these forms. There is also, a form known as litigious paranoia, in which the victims are constantly going to law on account of their querulous disposition. Paranoiacs may or may not have hallucinations. Those suffering from persecutory delusions will frequently have auditory hallucinations of a disagreeable character; hearing voices calling them vile names or accusing them unjustly of various wrong-doings. Those having delusions of religious nature, more frequently have visual hallucinations, though frequently they have both visual and auditory hallucinations, in which they see angels, saints, etc., and hear specific commands or receive communications from the spirit world, which they frequently attempt to put into execution. These cases have been known to sacrifice their children as an offering to God, or to subject themselves to great suffering in conformity with some supposed divine command. A brief history of a case of paranoia that came under my personal observation shows very well the *origin, progress* and *consequence* of the delusion in the most common and typical form of paranoia.

Mr. J. C., single, age twenty-nine, farmer, of German origin, on the morning of January 23, 1901, while sitting quietly by the kitchen fire, with his father and mother, suddenly sprang up, drew revolver from his pocket and shot his mother dead. The father saved his life by springing into an adjoining room, but was shot at twice through the closed door. J. C. then rushed out of the house and meeting his only brother in the barnyard, also shot him

dead.. He then coolly walked away towards the woods, and nothing was seen of him for three or four days, when he calmly appeared on the scene again, was arrested and taken to prison. No provision having been made for his defense by his family, the presiding judge appointed two lawyers to defend him. Upon their trying to consult with him, however, he maintained a stolid indifference to the whole matter and refused to talk to or have anything to do with his lawyers. At this stage I was called in, and after several examinations was able to satisfy myself that the man was a paranoiac. I found that his maternal grandmother was insane, his mother neurotic and hysterical, and his brother an epileptic; thus showing the typical paranoiac heredity. J. C., so far as I could learn, had never shown any special peculiarities until about two years previous. It was then noticed that he was becoming quiet, morose, hypochrondriacal and depressed. This depression caused him to neglect his ordinary work and duties, and his mother, thinking that he was simply growing lazy, scolded him for his refusal to work, and was doing this on the fatal morning when the shooting took place. This constant nagging at him for neglecting his work soon caused him to develop delusions of persecution in regard to his family in general and his mother in particular. After many visits to him, and winning his confidence and trust, he told me that his family were trying to get rid of him, and were just getting ready to send him to the penitentiary; that his mother did not care for him, and wanted to get him out of the way so that all the property could go to his brother. As a matter of fact, however, it was shown that his mother was always extremely kind to him, except in so far as scolding him for his apparent laziness, which came on so suddenly and, to her, so causelessly. He never showed the slightest re-

morse at any time for what he had done, and thought he was perfectly justified in doing as he did, and that he had saved his own life by so doing, and took not the slightest interest in the proceedings of the trial, because he had not, as yet, emerged from the depressed condition which marks the first stage of this disease. He showed many of the stigmata of degeneration, and after repeated and careful examination the diagnosis was positive, but so strong was the feeling against him that the jury decided he was guilty of murder, and the judge sentenced him to be hanged. The Governor, however, at the suggestion of the Board of Pardon, appointed a commission to examine him, and he was easily found insane and sent to a custodial institution. This case shows very clearly the following points: The bad heredity, the prodromal stage of depression, the genesis of the persecutory delusion, the frequent *result* of such a delusion, and the inability of an ordinary jury to recognize this form of insanity. There are certain features which characterize the crime of the paranoiac. They are the *boldness* and *openness* with which they are committed, though there are exceptions to this rule. The *horribleness* and *unnaturalness* of the crime, such as matricide, fratricide, etc. The *absolute* lack of motive from a *sane* standpoint, the *total lack of remorse* and their very clever arguments to prove justification for their deeds, which, from their standpoint, seem perfectly reasonable.

And now, just a word as to how to examine the patients to get at their true mental condition: During the depressed stage most of these patients are hypochrondriacal, and they will talk very freely about their physical ailments, and like nothing better than for a physician to constantly examine them. By gaining their confidence in this way, we can often arrive at a true conception of their mental infirmities, as one would never be able to do did we

go at once at the mental examination. In the latter stages, when the delusions are fully developed, these patients will talk about their delusions very freely, unless they suspicion that there is some ulterior motive in your questioning them, or unless you ridicule them. They then frequently express their contempt for you in very uncomplimentary terms, and the interview comes to a sudden and fruitless termination. The whole secret lies in being tactful in gaining their confidence, and you must appear to be intensely interested in their schemes, and seemingly admit their plausibility. Should you argue against them too strenuously, they are very likely to put you in the unenviable category of their persecutors. This result happened to one of my coworkers in one of the large Eastern hospitals, and he paid the penalty with his life for attempting to do what he considered to be his duty, forgeting that he was dealing with a paranoiac who had fixed his delusions on him as one of his persecutors. It will at times become our duty to come out boldly and state whether or not we think the paranoiac insane, and, if insane, dangerous to be at large. If we are conscientious and understand the nature of the disease in question, and believe the patient to be insane and dangerous, we will say so; regardless of what the public may say, or of the danger to ourselves, which may follow the assertion, and let me assure you that this danger need not be too much minimized, for the physician who pronounces a paranoiac insane, in any case in which he may be involved, incurs the everlasting enmity of the paranoiac, and should he be turned loose, as he frequently will be, you may expect sooner or later to hear from him in a very unpleasant manner, to say the least. Numbers of physicians have been killed by this class of insane for this very cause.

TREATMENT.

The treatment of this disease is largely prophylactic and custodial. The child of bad neurotic heredity showing the characteristics of the paranoiac in embryo, that is, abnormal self-consciousness, hypertrophy of the ego, self-opinionated, selfishness, lack of moral sense, etc., should, if possible, be most carefully reared and trained, and these traits corrected as much as possible. During the prodromal stage of depression every kindness should be shown these unfortunates, in order to prevent, if possible, the development of the persecutory delusions. At times, in patients whose mental caliber is good, rational conversation and calm, logical and dispassionate arguments may help the patient to correct, for a time at least, his newborn delusions. Too vehement arguments, however, or attempted ridicule will only defeat the end you desire and serve to place yourself in the list of one of his persecutors, with its attendant dangers. The only rational treatment for these patients, after the fully developed stage, is custodial, and this means constant and careful watching, and this can best be done in an institution devoted to the care of the insane.

The medico-legal aspect of paranoia is most interesting, and has been the ground for much competent and incompetent expert testimony. Let me beg of you, should you be called in as a medical expert on one of these cases, to first assure yourself that you are competent, and then be perfectly honest. Do not try to qualify as an expert in nervous and mental diseases, and then go on the stand and be unable to tell what is meant by an Argyle-Robertson pupil, or Romberg's sign, as did a so-called expert in a recent famous trial; the same trial also furnishes us an example of an expert who was evidently thoroughly competent, but whose *judgment* must have been biased, to

have tried to sustain the contention that his client was insane when he committed the act, but was then sane. I refer, of course, to the Thaw case, and Harry Thaw, if insane at all, which I firmly believe he is, is a paranoiac, and, if so, is just as much insane now as when he committed the act. If all experts were competent and honest, expert testimony, especially in insanity cases, would be in better repute.

Briefly summarizing them, we find that paranoia is a chronic, progressive form of insanity, beginning in early adult life, in persons of bad neurotic heredity, and the characteristic symptom is always the systematized and fixed delusion. Recovery practically never occurs; they are all liable to become dangerous; they are the most difficult of all forms to prove insane, and their insanity is frequently not recognized until they have committed some overt act; they having possibly been previously recognized as being eccentric, or cranks. That this form of insanity may be more carefully and intelligently studied to the end that the public may be more safely guarded, is my only motive for bringing this subject to your attention.

DISCUSSION ON DR. ADAMS'S PAPER.

Dr. St. Joseph B. Graham, of Savannah: I have enjoyed Dr. Adams's paper, for the reason that there is much to commend in what he has said on this subject. As long as we have such juries as exist now in the Southern section of our country, and elsewhere, for that matter, the medical expert is *non est.* As it is now, we have a jury composed of twelve men, one of whom is a good watchmaker, a good man in his trade; another a farmer, the best there is in town; another makes horseshoes, another is a dry-goods merchant, and the others are engaged in similar trades. We have twelve such men, who know

no more about insanity than a turnip knows how to grow into a cherry. The medico-legal expert can talk himself blind, and the jury will sit and listen, and because they think a fellow who is brought before them is sane they will turn him loose.

Gentlemen, it should be put before the Legislature of every State in the country, particularly of this Southern country, that a jury should be composed of medico-legal experts; they should constitute the jury; men able to sift and to judge of the wisdom and evidence of the man or men who give it. If a juror is a Geneva watchmaker and I tell him about a certain little muscle underneath the eye, and tell him its name, after I have finished he is not able to recall it for three weeks, perhaps never, and does not know anything more about it than before.

Let me mention a case in point from my personal knowledge. It happened in one of the charity institutions in New York. A doctor, not a large man physically, after coming out of his room, encountered one of the inmates, who was scrubbing the floor of a ward. His room was in the rotunda, and in acting as the officer of the day he had to be up early to get down at seven o'clock. As he started to get out of his room a big fellow grabbed him and said, "Now, I have got you; I am going to throw you down-stairs." And it was four stories to the bottom. The doctor never flinched; he never moved a muscle. He said, "Oh, Mike, that's easy, for you are a giant. Let me appeal to your strength. Take me down-stairs and throw me up." Sure enough, Mike took him down-stairs, and by that time the bells began to ring, and he was put in the ward forever. [Appause.]

Dr. Adams (closing the discussion): We all recognize that it is difficult for the ordinary layman to recognize this or any other form of insanity, except the patient has

melancholia or is a raving maniac, then he is able to recognize it. Few juries can recognize paranoia. As a matter of fact, the patient may have a higher mental capacity than the jurors who try him. The paranoiac has too dangerous a form of insanity to be at large, and, as I said in my paper, frequently their disease is never found out until they commit some horrible crime, and then they are stamped as paranoiacs, and in some communities they take a man out, who has committed such a crime, and hang him on short notice. I will only say this, that I believe medical expert testimony is in such bad repute because so many physicians for a few dollars apparently allow their judgment to be biased in favor of their clients. Dr. Evans, superintendent of the Morris Plains Asylum, New Jersey, is undoubtedly a good, capable man, but he knows as well as any of us that if Harry Thaw was insane at the time he killed his victim, he is insane now; yet he testified the opposite on the witness-stand. When people of such standing do things like that, it is mighty easy to think that way when you are going to be rewarded with a big sum of money for so testifying. No one should take that side of the case if he is firmly convinced that he is going to testify as the facts in the case demand.

A FEW PRACTICAL POINTS ON INFANT FEEDING.

BY SAMUEL A. VISANSKA, M.D., ATLANTA.

Six years ago, when this Association met at Augusta, I read my first paper before it on the subject of infant feeding; my object in continuing this subject now is to tell you whether the results of my experiences have been satisfactory or not, in order that, in this way, we may come to some conclusion as to what method we shall adopt.

Sometimes some of us boil over with enthusiasm on a subject or method, read a paper regarding it, and the members of the Association must ofttimes wonder if the doctor is carrying out his same ideas, or if his practical application of them has caused him to make changes in his original theories.

With so important a subject as infant feeding—a subject which has always baffled our skill, and which must always continue to do so—we can not deal too often, or discuss too freely, to suit me. Experience has taught us that there are but two ways of feeding an infant, namely, either on human milk at the breast of a mother or wet nurse, or upon an artificially prepared milk diet; hence, we have the two corresponding classes of the breast-fed and the bottle-fed baby. It goes without saying, that the breast-fed are, as a rule, a happier, healthier and larger lot than the bottle-fed, and that the mortality of the former is far less than that of the latter. The most careful preparation can not possibly make the milk of another animal chemically identical with that of a woman, or

similar in its effects on the child; therefore, it is the solemn duty of every healthy mother to nurse her infant, and it is still further the duty of the attending physician to see that this method is carried out.

The question, then, might well be asked, "Why are so many infants fed otherwise?" I am inclined to believe that physicians, as a rule (there are exceptions to all rules), do not give this most important part of their duty enough time, thought or attention, especially to the primpiara.

How few of us think of preparing the breasts for our little visitor, rather trusting on nature to do that; but, gentlemen, how often do we find nature requiring just a little assistance! It does not need much, and a little time spent here will lessen your death-rate and bring joy and happiness to many a parent. Physicians do, or should, examine the urine before labor; they sometimes determine the position of the child, but do they examine the breasts to see what the outlook for nourishment is? The most important point here is to prepare the nipples, and this should begin at least two months before the expected time. Teach the mother how to pull the nipples out, and give some slightly astringent solution to toughen them somewhat for the suction force to be made by the infant. I prefer a solution of alum and distilled extract of witch hazel. Sometimes you will find that while the fingers will pull the nipples out into good shape, that as soon as the breasts begin to enlarge and secrete milk the nipples seem to shrink, or rather become inverted, and are not long enough for the baby to take hold. Then you are "up against it," and it will require a great amount of patience on the part of the mother, nurse and doctor to overcome this. It is right here that a great number of infants get a bad start. The baby frets, and the first thing you know

a nipple already "developed" is ordered from the drug store, and the little one is placed on one of the artificial foods. This trouble can be overcome in most cases by the use of a Yale breast pump. It not only stimulates the secretion of milk, but it draws the nipple out, and, by placing the baby to the breast immediately, it has little trouble in nursing. This process might be repeated each time for several days. You can vary the amount of suction force by moving the pump up and down. It works in the same way as does a bicycle pump, and it does not get out of order nearly as quickly as the old-style breast pump.

Another important point is the diet of the mother just before and after labor. This should consist of easily digested foods, chiefly liquid nourishment or semi-solids. No heavy foods, such as pork, cabbage, turnip greens, or pastries, etc., should be given. Especially after labor it is safe to give only such foods as gruel, soup, soft eggs, toast and tea drawn with milk instead of water, all of which will usually produce sufficient stimulation to the mammary glands. The malt preparations might be good in a few cases where the milk is scanty, but I am inclined to believe that their use has been overestimated.

Sometimes we find that infants do not thrive even on breast milk, and we should be able to tell whether the fault lies with the fats or proteids. This can easily be determined by the use of Holt's lactometer and cream gauge.

In regard to wet nursing, it is only in the extreme cases that I suggest this course of feeding, as experience has taught me that there are many objections to a wet nurse, and, indeed, in this part of the country it is often impossible to find a suitable one.

ARTIFICIAL FEEDING.

By conscientious work on the part of the chemist and physician the artificial feeding of infants has become a science. By chemical analysis we know the composition of mother's milk and of cow's milk, while by actual experience we have found that it is the casein in cow's milk which is difficult to digest, and now by the "percentage feeding," known also as the "American method," the difficulty formerly experienced has been made easy.

As I stated in my former article, we must have a sort of starting point, and then modify to suit each individual case, as you will find every infant a law unto itself.

The infant's stomach has certainly been a great experimental station, but even this is now no longer necessary.

The method of Professor Seibert, that of feeding by weight and not by the age of the child, has been carried out by me for years and with most excellent results, and gentlemen, I "stand pat" on this method.

There is good reason for this; a large child requires more food than a small one, just as a large horse requires more food than a small horse, and it is on this principle that we should feed infants. To illustrate: A baby at the age of three months might weigh eighteen pounds, while the average weight is only twelve and three-quarter pounds. If you were to direct the preparation for the three months' old baby according to its age, the formula would be for a baby weighing twelve and a quarter pounds, and, therefore, five and three-quarter pounds of the baby would be insufficiently nourished. On the other hand, a child at the age of three months, weighing eighteen pounds, can be placed on the same formula as the average baby of eight months weighing eighteen pounds.

It is during the summer months, when the difficult cases come in, that this method of weight will serve you. For

example, a case of marasmus is brought to you, and, upon inquiry, you learn that for the past month or so the different foods were given, but in some way the baby lost weight, and it is now almost a skeleton, with wrinkled face and almost a continuous whine, looking at least eighty years old. You ask the age, "eleven months;" the weight, "ten and a half pounds;" and, gentlemen, if you were to direct the food according to age it would never agree with it. Instead, what do we do? We give it not only the same percentage of fats and proteids and sugar as we would a normal baby at two months, but also the same quantity of milk.

Modified cow's milk is the ideal food for infants, but it requires some experience and judgment to know when to begin the milk after leaving it off. In "summer complaints," for instance, I never allow a drop of milk to pass the infant's lips, but am guided entirely by the condition of the infant's stomach and the character of the stools. The important point I wish to make here is this: An infant is brought to you with a gastro-enteric trouble, a history of having tried first one food, then another, and the question is what to do. I begin by taking all food except sterile or barley water, treat the disease, and then place the baby on modified milk, according to its weight. As a rule this agrees with the little one, and all goes well for a week or two, when, for some reason, the stools change in character and frequency, and in cases not understood you might think it was the preparation that was at fault; but, this is usually not the case. There might have been an infection from the milk supply, or carelessness in cleaning the bottles and nipples. Then, again, infants are all liver, so we would take the baby off the milk; cleanse it out thoroughly for a day or two, and, instead of changing your food, or even the formula, begin with

it again. This course might have to be repeated several times during the heated term.

It is a bad practice to give sterilized milk for too long a period for fear of producing scurvy, and my practice is as follows: Sterilize during the summer, pasteurize in the spring and fall, and give raw milk during the winter months. During the period of sterilization it might be well to give a little orange juice, and by close observation you can easily prevent scurvy. I have yet to see a case among my patients.

Of course, it is necessary to have a rigid milk inspection in all cities. On this latter point too much can not be said, but I trust I have outlined a way in which infants can be properly fed and their health preserved, even under the present insufficient sanitation of the general milk supply.

DISCUSSION ON DR. VISANSKA'S PAPER.

Dr. H. McHatton, of Macon: Mr. President, I am very glad the doctor saw fit to bring this subject before the Association for discussion, as it is one of the neglected subjects in medicine. I think I can safely say that more children will die in Georgia in the next ninety days from improper feeding than from all other things combined. It is such an important subject, and yet one that is only brought before the Association now and then. As we are situated here, we practically have nothing to take the place of mother's milk except the modifications of cow's milk. So far as I know, there is absolutely no prepared food on the market of any description that a child can live on.

Twenty years ago I read a paper before this Association on this same subject. I had a little pamphlet published, in which I gave some instructions to mothers in

regard to feeding of infants, and ever since then, at my first visit after confinement, I have given the mother one of these little pamphlets. Attached to it is a weight table. I request the mothers to weigh their babies once a week, and make a record on this table. As long as the child is improving, or as long as there is a normal increase, I consider the child is getting sufficient nourishment. As soon as the breast begins to fail, you begin to get either no increase in weight, or perhaps a loss in weight. It does not make any difference what age the child may have reached at that time. If I can not improve the mother's condition in a short time, and get another increase in the weight of the child, I put the child on modified milk. I look upon the weight chart as one of the most important things connected with the feeding of children, because it will always give you an indication as to whether the baby is thriving or not. As a rule, if you go to a case a day or two after confinement, and there is no milk, there is some reason for using artificial food. The ordinary instructions are to give milk and water. The feeding of children in this country is absolutely horrible. There is scarcely a city of any size in this State but what, during the next ninety days, if you took up the morning's paper you will see anywhere from four to fifteen deaths of children of three months to one year of age, when practically all of these deaths are due to improper feeding.

Dr. St. Joseph B. Graham, of Savannah: I agree with Dr. McHatton that a weight chart is one of the most important things we can use in connection with infant feeding. During my term at Heidelberg, at the Louisien Heilanstadt, under Professor Vierholdt, professor of diseases of children, he relied more on the weight chart than on anything else. He also took into consideration the stools of the infant. The Germans are very particular in regard

to the matter of examination of the stools to find out whether the baby is passing too much fat or not. They take fat in the milk, but it comes through in the form of a fatty stool, and they dissolve that out with potassium and such things, making a soup of it, and finding out exactly what the stools amount to, how much fecal matter there is, and how much fat. A baby of my own was born in Heidelberg, and was under the care of Professor Vierholdt. That baby did badly on all sort of milk, but after sending it to the Louisien Heilanstadt it soon gained a pound a day on modified milk.

Dr. Visanska (closing the discussion): There is nothing I can add to what I have already said. I have taken up too much of the time of the Association, but simply wish to thank the gentlemen who discussed the paper.

SOME CASES OF ABDOMINAL PAINS.

BY DR. LOUIS C. ROUGLIN, ATLANTA.

The abdominal and pelvic cavities containing but comparatively few organs, the location of each in health varying but slightly from a relative fixed position, the function, pathology and symptoms arising of those that are most often subject to acute and inflammatory diseases being rather well defined and known, it would seem that there should be but very little difficulty in recognizing these lesions and making an early and correct diagnosis. Pain is the chief symptom which first attracts the patient's attention, and for the relief of which the physician is consulted. Now, by general consent, the laity has divided abdominal pains to belong to three classes of disease, namely, colic, indigestion and appendicitis, and frequently a careless physician, making a flashlight diagnosis, helps to confirm this belief and gives it the stamp of authority.

There is, perhaps, in the whole domain of medicine, no part in which an early and exact diagnosis is more important, and yet more difficult to make, than that in which abdominal pains is a prominent symptom, and the physician can less afford to commit himself until he has at least made a thorough physical examination, and in some cases a microscopical and chemical examination is necessary before one can reach a conclusion as to what would be the rational method to pursue in a case of abdominal disease.

The symptom of pain, when it can be traced to its incipiency and not aggravated by misapplied efforts, or soothed and masked by opiates, may serve as a guide upon

which as a basis a correct diagnosis can be made; but this is, in a majority of cases, not attainable, and we must also remember that the absence of pain in abdominal disease is often fraught with grave consequences; and I need not emphasize that in connection with the pain all physical, subjective and objective, and all rational signs must be considered before a proper conclusion can be reached.

Disease, in which abdominal pains play an important role, may be divided into two great classes:

1. Those which are entirely medical.
2. Those which are entirely surgical,

and an intermediate class,which may gradually or rapidly drift from one into the other, or which may at all times belong to both branches.

Abdominal pains belonging to the first class are characterized that in, but few exceptions and except under special conditions the manifestation of the systemic phenomena of shock is wanting; as in acute and chronic constipation, ordinary colic, mild cases of dysentery, typhoid fever, non-perforating ulcers, syphilis, gastralgia, the excessive peristaltic action incident to the administration of purgatives and other drugs, notably arsenic, ipecac, etc.

The second class may be subdivided into these:

1. Pain, and shock developing later, peritonitis either never present or developing slowly, as in tuberculosis.

2. Pain and shock appearing simultaneously, but without peritonitis, as in abortions, miscarriages, or in torsion of pedicle of an ovarian cyst.

3. Pain and peritonitis occurring together without shock, as in inflammation of the appendix.

4. Pain, shock and peritonitis occurring simultaneously, as in gangrene of the gut.

The symptoms, history and physical examination can

not always be depended upon as a true guide as to what class a case may belong, for often the true condition of a case can not be determined until the abdominal cavity is opened. The following cases occurring in my practice will serve to illustrate the difficulty of determining the true pathological condition with pain as a prominent factor:

Case No. 1.—M. G., male, age ninteen years, clerk in a store. Does not drink or chew, smokes moderately; had diseases of childhood, otherwise negative; denies all venereal diseases; family history negative. First presented himself July 26, 1904, suffering from constipation and obstruction of the bowels, due to impacted feces. From these conditions he was relieved under the usual treatment, and his bowels regulated by diet and occasional olive oil enema.

On October 1st he came to the office complaining of pain in the left hypochondrium; his bowels were regular, had good appetite, and no temperature—on account of the pain he had to quit work, and could not sleep. He described the pain as sharp and cutting, which would strike him all of a sudden and "double him up;" this would last from fifteen to twenty minutes, would disappear to reappear again at a varying interval.

On examination the whole abdomen was found to be extremely hyperesthetic, palpation was impossible. On the patient's refusal to be anesthetized I sent him home and endeavored to examine him while seated in a hot water bath; from this I derived but little satisfaction, and again made an examination on the next day, but could find no physical sign of any pathological condition. Examination of urine and feces was negative; his stools were normal, and he had regular actions. I diagnosed the case as one of nervous enteralgia, and put him on a pill of arsenic sumbul and iron.

Patient gradually grew worse, appetite became poor, and he assumed a sluggish, drowsy appearance, complained he could not sleep on account of pain, and said that he felt a tumor in his abdomen which was not stationary, its range of mobility was by no means confined to the abdominal cavity. He would feel it at times between his shoulder blades, at other times in his legs, but most often in his abdomen—but repeated and careful examinations failed to show any abnormal growth, and patient quit me to consult other physicians.

Patient returned to my office in about a month; he looked pale and emaciated, and said he found no relief. He cried bitterly, saying he knew he had a cancer, and that he was going to die; and said the tumor was the size of a child's head. I spoke to Dr. Claude Smith about the case, and he suggested that I humor the patient.

Accordingly, next day I asked him to point the tumor out to me, which he did, pointing to the right side of his chest, about the fourth intercostal space, but immediately afterwards he claimed that the tumor had wandered down to the lower part of his abdomen. I made deep pressure over the part and put adhesive straps tightly over it, telling the patient that this would anchor the tumor. I put him on a general tonic, and twice daily applied the galvanic current over the supposed site of the tumor.

The patient improved gradually, and from time to time stated his tumor was growing smaller. On December 15th patient said the tumor was all gone but the root. I told him that I would remove the root that very day. While wetting my sponges my patient suddenly cried out. I ran to him and found him foaming from his mouth, his face congested, his knees drawn up, throwing his hands about as if grasping for support, he was gasping for breath, his pulse rapid, and he was emitting groans that

I thought could be heard all over the building. I chloroformed him, and while under anesthesia I again examined him carefully, but could find nothing. He lay in my office for almost three hours, and the first question he asked was, "Did I remove the root?" I assured him that the same was now thoroughly eradicated, and he seemed to feel better. He came to my office a few more times for electrical treatment, and was finally discharged as completely cured on December 20, 1904. He has returned to work, has never had a return of the symptoms, enjoys good health, and tells an interesting story to his friends how a large tumor was removed, or rather electrocuted, in his abdomen.

Case No. 2.—T. S., female, married, but separated from her husband, has one child seven years old, had a miscarriage five years ago, and was curetted for an abortion a year ago. Claims to have hurt her hip in a runaway accident, and complained of pain in hip and on left side of abdomen. Patient had a temperature of 104 degrees, and on examination of hip could find no evidence of any serious injury, except a slight bruise. On vaginal examination I found a rather large uterus; the cervix was flabby, and a dilated os. Patient was curetted without an anesthetic being given and remains of placenta removed, which patient declared was left over from last year. Patient became delirious, temperature went up to 105, and complained chiefly of pain in the abdomen. For a month patient was in a precarious condition, running a septic temperature, as shown in this chart, and finally recovered, recuperating and regaining her usual health in a remarkably short time.

Case No. 3.—S. J., male, age twenty-nine, single, storekeeper; had never been sick before a day of his life. Was called to see him on May 15, 1905, at his place of busi-

ness, and found him attending to his usual duties. He complained of pain in his abdomen, said his bowels had not moved in two days. This was about six p.m. Patient's temperature was normal, pulse was 128, and he appeared in pain. I advised him to go home and let me examine him, but patient insisted that he was not sick enough to go to bed. He asked if an enema would hurt him. I said "no," and he replied that he would try that, and would let me know if no better. No amount of persuasion by me could induce him to go to bed. I was again called at midnight, and found patient suffering agonies from pain in the abdomen. The pain was generalized. Two high alum enemas failed to produce a movement of the bowels. I advised surgical consultation, but the patient and his family would not listen to such a thing. On his brother's suggestion that a couple of porous plasters would relieve the condition, I was dismissed from the case to be called on again next morning early. Patient said he spent a miserable night; his general condition seemed to be good; his bowels had not moved. After more or less objections, they finally consented to have Dr. Nicolson called into consultation. Immediate operation was advised, but the family again objected, but called me over the 'phone about an hour later and said they would consent to the operation. Drs. Nicolson and McRae performed the operation. The whole abdominal cavity was found full of pus and his appendix greatly inflamed. The patient for a week suffered the greatest of agonies; his bowels had not moved; and died on the sixth day after the operation. It will be important to note that this patient was operated upon within eighteen hours of the initial attack. His temperature was subnormal until a few hours before death, when it reached 105.

Case No. 4.—F. B., female of immoral character. No

history of childbirth or miscarriage; had gonorrhea about a year and a half ago; had no syphilis; about six months ago had an attack of pain in her left side. A doctor had put something in her arm, and she got better. Three weeks later was taken with pain in her left side; was treated in Grady Hospital for two weeks; she refused any operative interference, and says she was entirely well until September 14 of 1906, when she was taken with pain in her left side and thigh—most of the pain being in her left thigh.

She had a profuse vaginal discharge, and the cervix uteri and vagina was full of erosions. On palpation a large mass could be felt in the posterior wall of Douglass's pouch. For two weeks she was treated by douches and local application, which benefited the discharge and healed the erosions, but the pain in her left thigh was as severe as ever, and she would disturb all the patients with her moans. She finally consented to have an operation performed.

The appendix was found inflamed and imbedded in a mass of adhesions from the uterine adnexa. The left tube was distended with pus and convoluted around the left ovary, which was diseased. The right ovary was found to have undergone cystic degeneration, and the right tube was elongated and distended with pus—all of which were removed, the patient making a complete recovery.

I have selected these four cases to illustrate that pain as a symptom in the abdominal diseases occurs under so many various conditions, and is of such a great deal of importance in an unlimited number of pathological conditions, that it must not be treated lightly, and that every case of abdominal pain deserves the highest consideration at the hands of the physician.

COUGH AND ITS TREATMENT IN CONSUMPTION.

BY M. M. SALIBA, M.D., SAVANNAH.

For as nothing is of greater importance in the management of a case of consumption than the proper treatment of the cough, especially when this symptom takes, as it frequently does, a prominent place in the sufferings of the patient, I was led to bring this rather trite subject to your attention. Circumstances brought me in quite close contact with a number of tuberculous patients, and I will state that there is no symptom of which they complain so urgently as of cough; and there is scarcely any which so often baffles our efforts for its relief. Cough is a reflex act set up by some exciting cause, and as a symptom of pulmonary consumption is almost always present. However, in some cases, it is never severe; in others it does not appear until late in the disease, and in a few not at all.

It is the result of a forced expiration with rima glottidis closed, and is due to irritation of the vagus, or one of its branches, which transmits an impulse to the medulla, where the respiratory motor nerves are acted upon. The irritation may be caused by chronic pharyngitis, by laryngitis, bronchitis or tuberculous ulcers in the larynx or trachea, though the last named is rare; by pleuritic irritation from superficially seated tubercules; by enlarged bronchial glands, or by the presence in the bronchi of acrid material from a phthisical cavity, or by tenia or other forms of a gastric or intestinal irritations.

Cough in consumption is one of the earliest as well as

one of the most persistent symptoms. In the early stages it is often short, dry, and hacking, occurring principally in the morning and evening. Late it often becomes noisy, paroxysmal, and distressing. Sometimes the cough is excited by food, and after a meal may be so severe as to be terminated by vomiting. It often becomes more frequent and more distressing as the disease advances. It is apt to be aggravated by excitement or exertion.

This subject is far too wide to be treated systematically, for the severity of the cough is doubtless modified by a variety of circumstances, such as the amount of bronchial irritation, the quantity and kind of expectoration, the constitutional irritability, and the condition of the skin.

It is impossible to possess too many means for repressing a symptom which so exasperates the disease. But in treating the cough of phthisis it is necessary to be discriminating; because the treatment will vary according to the character of the cough, its cause, and the effect it produces upon the patient. In the first place, we must constantly bear in mind the relation of cough to expectoration, and we must keep in view the fact that cough of phthisis may be either simply a cough of expectoration, or it may be purely a cough of irritation, or it may be both a cough of expectoration and a cough of irritation; and this last is the kind of cough we, in nine cases out of ten, have to deal with in consumption.

The cough in consumption is essentially conservative, having for its object the removal from the air-tubes of morbid products which would be harmful if allowed to remain. As a rule, the cough is short, not very frequent or difficult, and relieves rather than distresses the patient, so that it may require little, if any, treatment. Certainly, the routine administration of opiates for cough in phthisis is quite as likely to do harm as to do good.

We should especially guard against the error of treating the cough of phthisis as purely a cough of irritation, to be overcome solely by the use of sedatives, such as opium, etc.

I do not undervalue the usefulness of sedatives, such as opium, morphine, codeia, etc., in the treatment of phthisis; for there are few cases of this disease which will not need, in some part of their course, the cautious use of such sedatives. So long as the cough is always attended with expectoration we must be very careful in the use of opium, for opium, by diminishing bronchial secretions, causes an inspissation of the mucus in the air-passages, and makes it more tenacious and more difficult of expulsion. If the cough be less, the secretion will be longer retained in the lungs, and experience alone can show whether the frequent cough, or the retention of the secretions, will cause most discomfort to the patient.

With chronic cavities which freely secrete, the cough is, as a rule, not frequent, but paroxysmal, occurring once or twice a day, especially in the morning, and continuing until a large amount of secretion is brought up and the cavity emptied. After this, there will be little cough until the cavity has again become filled. Position largely influences the cough in such cases as these; thus, by lying in some particular position, as on one side, the expectoration is facilitated, and the coughing-bout shortened, while, when rest is desired, some other position is assumed, in which the fluid is more easily retained within the cavity for the time.

The morning cough of phthisical patients is almost invariably a cough of expectoration, for in most cases of phthisis there is a tendency to tracheal and bronchial catarrh, and during the hours of sleep the catarrhal secretion accumulates either in cavities or in the air-tubes, and

on waking has to be expelled. In many cases, the morning cough is not due so much to the amount of secretion as to its viscidity and the difficulty of bringing it away. This is greatly relieved by warm drinks taken on waking or rising, as, for instance, a cup of warm milk or coffee. The heat of the warm drinks loosening the secretions in the bronchi, and the sputum then comes up with much less effort.

The morning cough usually varies inversely with sleep. If the night has been good, the morning cough may be severe; if the night has been disturbed by cough, the morning attack will be absent or slight. The administration of a sedative at night, to check the cough and give sleep, may be followed in the morning by such a severe bout of coughing that the patients will prefer the broken night's rest they get without the sedative.

But, on the other hand, there are many cases, especially of advanced phthisis, in which, after the discharge of much expectoration, an irritable condition of the mucous membrane of the air-passages remains, and a cough of expectoration is succeeded by a cough of irritation. Also in some cases the cough is out of all proportion to the amount of secretion. It is either constant or occurs in violent paroxysms. When constant, even if not very violent, it is a source of great discomfort, and may keep the patient from sleep all night; when occurring in paroxysms it may become a serious complication in the case by the exhaustion it produces, and by the pain in the head and chest it is attended by. It may lead to vomiting, and interfere with the taking and digestion of food; and of course it increases the risk of hemorrhages. For such an irritable cough some sedative, especially opium, is indicated. In some cases of phthisis, and especially in early stages, and when some dry pleurisy is found over one or

other apex, or when early interlaryngeal changes have shown themselves, we may have to deal with a cough which is often purely irritative, and unattended by any expectoration; this kind of cough is peculiarly distressing to the patient, because it is without aim or object, and sometimes with little or no intermission. We must spare no effort to relieve this cough. When this form of cough is attributed to irritation in the lung or in the pleura, counter-irritation to the skin, with iodine for example, a mustard leaf, or a blister will often prove a valuable remedy. But in treating this form of cough we must be prepared for the necessity of frequently changing or modifying our remedies, Butyl chloral, chloral hydrate and bromide of potassium have been found to relieve this form of cough especially in patients of neurotic or hysterical temperament.

I have found belladonna, either alone or in combination with opium, of great service in relieving the cough of phthisis where there is both excessive secretion, which it diminishes, and excessive irritation, which it allays.

In most of these cases the cough is due to irritation of the large air-tubes, notably in the larynx or at the bifurcation of the trachea, and it is usually associated with more or less catarrh. This kind of irritable cough is best treated with inhalations, dry or moist. The moist inhalations consist of steam, impregnated or not with some balsamic or stimulating aromatic substances, or with some more sedative drug. The dry inhalations are more efficacious, and are certainly more convenient. (See the writer's "The Antiseptic Inhalation Treatment of Phthisis" Trans. of the Med. Assn. of Ga., 1903, p. 228.) When an asthmatic tendency or predisposition is associated with phthisis, opium or stramonium cigarettes will be found, perhaps, the best remedies for the night cough.

When the cough depends upon laryngeal disease, the remedies chosen will be determined to a great extent by the condition of the larynx, and it may be necessary to apply some sedative, e. g., cocaine or morphia, directly with the brush. A simple means of calming the cough of laryngeal irritation, is sipping iced water.

When the cough is due to irritation or hypersensitiveness of the pharynx, as it sometimes is, combined with laryngeal irritability, the pharynx and the larynx being both the seat of an irritative catarrh, a good plan is first to wash away the catarrhal secretion by a warm borax gargle, and then brush the mucous membrane of the pharynx and larynx with a sedative solution.

HOME TREATMENT OF TUBERCULOSIS.

BY J. E. SOMMERFIELD, M.D., ATLANTA.

In considering the various methods of treating tuberculosis, I think there is no doubt but that the greatest benefit is derived from such systematic treatment as can only be obtained in a properly conducted sanatorium. The wonderful results accomplished there can readily be understood when we consider how carefully each patient is watched. Under the constant observation of the physician, the least unfavorable symptom is noted and immediate attention given and often a severe trouble is thus averted. In the Sanatorium the patient receives minute instructions how to care for himself. The amount of exercise to be taken is prescribed. He is shown the importance of proper ventilation, fresh air and sunshine, also the necessity of nourishing food and finally he is taught how to prevent infection in others and reinfection in his own case. Then when he has completely recovered, or sufficiently improved so as to be able to leave the institution, he is prepared to take care of himself properly and to teach those with whom he comes in contact, how to protect themselves. Unfortunately, however, but few can avail themselves of this method of treatment for two reasons; firstly, the comparatively few sanatoria and, secondly, the inability of the majority to pay the fees necessary to maintain such an institution. In many of the European countries, the various cities are establishing sanatoria for the benefit of their citizens. In Germany especially, they are aided in this work by the sick benefit societies of the working people and also by the govern-

ment. Statistics are kept and it has been found that the number cured and the number of others whose lives have been prolonged have saved the State millions of dollars. Even the larger life insurance companies are making use of sanatoria for the benefit of their tuberculous policy-holders. The question is being seriously agitated in this country and now about ten States have their sanatoria, and we trust that in the not far distant future, Georgia will also be able to assist her citizens in the same manner.

In the majority of cases, when the diagnosis tuberculosis is made, the advice given by the doctor is that the patient seek a more favorable climate, either warmer or cooler as suits his condition. The advice is very easily given, but does the physician realize what this change means? In many instances, the breaking of family ties, traveling to a strange place with probably little or no ready money, no means to take care of himself and perhaps a family left at home needing his support. Is it a wonder if such patients become disheartened and homesick, grow worse and either become victims of the disease there or return home to die? Only a small number of patients can avail themselves of this form of treatment and it should be advised only when all the conditions are favorable.

And now we come to the great majority who are neither able to seek treatment in a sanatorium nor able to go to a more suitable climate. And what can we do to aid them? During the past few years I have been giving special attention to this class of patients and find that with patients in the incipient stage very good results can be obtained here and with this advantage, your patient does not become homesick and the expense incurred is very much less. The home patients must be divided into two groups, those in the incipient stage and those

further advanced. As most of the home patients are compelled to support themselves, I have not found it necessary to stop them from working, except in the advanced stage, only advising those whose ocupations are too confining and harmful, to change them and if possible to do outside work. Most of these patients first consult the doctor in his office and he rarely knows the condition of the patient's home. And it is here where all possible attention should be given, for I have found that no matter how carefully you instruct your patients about home affairs but few will carry out your instructions. I make it a rule to visit the homes of such patients at intervals and see that the instructions are carried out. The amount of labor entailed is great but the reward in the shape of a cured or arrested case is greater and one feels amply repaid when he sees a father restored to health and again able to support his family or a mother able to resume her duties.

When such a patient is first seen and the diagnosis made, I think it best to be frank with him and tell him he has tuberculosis, that it is a curable disease and that the cure will depend more upon him than upon the attention of the doctor and if he is not willing to obey instructions, that treatment would be useless. As a rule there is little difficulty experienced in getting the cooperation of the patient. Examine the home carefully, see if the house is sufficiently high above the ground and dry, that the bedroom is properly ventilated and the bed so placed that the patient does not sleep in a draft; otherwise place a screen around the bed to protect the patient. If possible have the patient sleep in a room alone. Knopf, of New York, has suggested an apparatus which is a modification of tent, an arrangement whereby patients can sleep indoors but still breathe outside air. The bed is

placed alongside of a window which has the lower sash raised entirely. The apparatus is attached to the inside frame of the window in the same manner as an awning is fastened on the outside and it can be raised or lowered by means of a pulley and rope. It is made of canvas and has a transparent window of celluloid enabling the patient to see what is going on in the room and permitting those in the room to observe the patient. When lowered it covers the upper half of the patient, who protects his head and shoulders by means of a woolen hood, leaving only the face exposed. In the day time, the apparatus can be pulled up and is out of the way. For patients confined to the bed, the apparatus can be used by day as well as by night. It has not been patented and can be made cheaply. It is described and cuts of same are shown in the Journal of the American Medical Association for January 19, 1907.

When patients are first seen a careful record of the conditions found is kept and examinations are made weekly. I find that the short talk of encouragement given each patient at the examinations, is of benefit. Microscopic examinations of the sputum are made and are only of value when positive. I have had cases with typical symptoms where repeated examinations of the sputum were negative.

Exercise: The amount of exercise to be taken will depend upon the condition of the patient; in many cases deep breathing exercises are sufficient.

Fresh air and sunshine are also necessary, and the value of same must be impressed upon him.

EXPECTORATION.

Expectoration—Patients are forbidden to expectorate upon the floors. Have them place cuspidors containing an

antiseptic solution in each room, and insist upon them making use of same.

Clothing—It is necessary that the clothing of patients be of proper weight and warmth for the season. As a rule, I find that most patients wear more clothing than necessary.

Diet—Special attention must be given to the diet, and only easily digested and nourishing food should be used. My chief reliance is placed upon milk and raw eggs, usually beginning with a quart of milk and three to four raw eggs daily, soon increasing until the patient takes half a gallon or more of milk and eight to ten raw eggs daily. When patients state that milk disagrees with them and they feel bloated, I find that a small amount of citrate of soda dissolved in the milk will prevent this condition. The beneficial effect of milk and eggs can usually be observed by the second or third week.

Medication—As a rule medication is of minor importance, and is prescribed to meet special symptoms, such as night sweats, hemoptysis, pain, cough, etc. In most cases I have found it necessary to give a placebo, as patients receiving no medicine think they are not having proper attention given them, and I usually give these patients a capsule containing guaiacol carbonate.

Will only report one case, as it is typical of most patients seen in the earlier stages:

Mrs. M., age thirty, came under my care in May, 1905. Family history: Both parents living. Two sisters, one brother and her first husband died of tuberculosis. Second husband living and well. About end of 1904 noticed that she was gradually losing weight, had a cough, night sweats, pain in chest.

Examination—Anaemic—weight 116 pounds. Diminished breathing on left side of chest. Percussion, dullness over apex of left lung, and on auscultation moist rales

heard, but anteriorly and posteriorly over left apex. Temperature 100° F. Visited her home, found it damp and advised her to move, which she did. Careful instructions were given her as to fresh air, ventilation, cuspidors, etc., and nourishing food was prescribed. At first she took one quart of milk and four raw eggs daily, and in three weeks was taking half a gallon of milk and ten raw eggs daily. She improved rapidly, and by December, 1905, her weight was 142 pounds. Her general appearance was changed, and many of her friends hardly recognized her. An examination recently made shows that the dullness has disappeared and only normal breathing is heard. I forgot to mention that the first examination of the sputum was positive, but several examinations made within the past six months were negative. The only medication given was a capsule containing guaiacol carbonate, with occasionally a mild laxative added to counteract constipation.

DISCUSSION ON DRS. SALIBA AND SOMMERFIELD'S PAPERS.

Dr. Henry R. Slack, of La Grange: Mr. President, I have enjoyed listening to Dr. Sommerfield's paper very much. There is one thing I am glad to see our profession is waking up to, and that is, it is unnecessary whenever we discover that a patient has tuberculosis to send him or her, as the case may be, to Asheville, to San Antonio, or somewhere else. Many of these patients are unable to go, and to pay the expenses incidental to such journeys. It is essential to impress on them the fact that they have the disease, and when you tell them the truth about their condition and point out what they are to do with your assistance, they will attempt to carry out your instructions. What they need is plenty of fresh air, eggs, sweet milk, etc. These are the remedies for tuberculosis, and if your patients will carry out your instructions in regard

to exercise, telling them not to take too much exercise, you will be agreeably surprised at the number of recoveries you will obtain in cases of tuberculosis by pursuing this course.

I have in my case-book at least ten cases in which tubercle bacilli were found in the sputum from four to five years ago, and those patients are now alive and just as healthy as they ever were. Some physicians say these patients did not have tuberculosis; that the diagnosis was incorrect, but if they looked through the microscope, tubercle bacilli would be seen beyond the shadow of a doubt.

A young man came to me from Emory College to be treated for tuberculosis. He stated that his father died of the disease. I examined him carefully, and found that the right lung was involved. I ordered that he be taken out of college, and live in the open air as much as possible. This was done, but in addition he was given eight raw eggs a day, and sweet milk. He gained twenty pounds in weight, and I believe now is practically well.

Dr. J. C. Johnson, of Atlanta: With regard to coughing, I have noticed that in crowded assemblies, at church, in convention halls and other places, there seems to be no effort or restraint on the part of any one who is coughing. I think much can be done by the personal efforts of the patient in controlling cough, and that a cough may be regarded very much as a sprained wrist or a sprained ankle. Of course, there is undoubtedly some irritation of the bronchial tubes, of the larynx or pharynx, which causes a person to cough. I am sure that every doctor here has been in some crowded place and has been hardly able to hear what has been going on on account of incessant coughing. Frankly, I do not believe that in the average case of coughing, bronchial, or from whatever cause, one-half the coughing is necessary. If we stop for a moment

to consider the mechanism of coughing, what is involved in it, we can see that fact more clearly. If a patient, who is having a spasm of coughing, will think for a moment that a cough is simply an exaggerated expiration, which must be preceded by an exaggerated inspiration, and instead of taking that exaggerated inspiration will force the expiration, in many instances the cough can be lessened and sometimes stopped altogether.

I am not in as close touch with the class of cases under discussion as the gentlemen who have read these interesting papers. But all of us have occasion to advise now and then about a cough, and if this method is followed, they can control or resist coughing many times. They should not cough every time they feel like it. Of course, if one can dislodge the mucus, the coughing will be less annoying. That has been my observation, and that thought occurred to me while I was listening to the paper, and I throw it out as a suggestion for consideration.

Dr. C. C. Harrold, of Macon: Very often practitioners wait until they are very sure of the diagnosis before they begin treatment in these cases. If there is only a slight pleurisy, without pain, when you stop these patients from working, particularly if they are boys, put them out of doors, and they will gain in weight and improve greatly in general condition, so that you will be soon convinced that there are no symptoms of tuberculosis, except the pleurisy, and no tubercle bacilli.

Dr. F. M. Cunningham, of Macon: I rise to speak from the standpoint of a laryngologist in connection with tuberculosis. Where the larynx is involved, I believe I am right in saying that it is not proper for the general practitioner to rely simply on treating the patient's constitutional condition. Enlarged arytenoids are one of the first appearances in this tubercular involvement, and may be

relieved by local treatment judiciously applied. These cases can be considerably benefited by the prompt application of lactic acid or some other properly applied drug. Curettage of ulcerated surfaces, if done gently and properly, may at times greatly benefit the sufferer from such a condition. It is wise on the first appearance of laryngeal complication to call in a competent throat man. He should not only be consulted, but his advice accepted as to the treatment. Of course, this does not mean that the general treatment shall not be carried out in combination with treatment directed to the larynx.

I have had occasion recently to see several cases of laryngeal involvement which, up to the time of examination, were not considered to be tubercular at all, and it is a frequent observation that laryngeal complications occur in tuberculosis which have absolutely no association with the tubercular trouble located in the lung.

The method of involvement of the larynx following the lung condition is a matter of extreme interest. Whether it results from contact of the mucus and the excretion of the tubercular-laden mucus over the laryngeal surfaces, or whether it is by a systemic involvement, is as yet open to question. I believe the accepted theory of the best men of this country and in Europe is that it is a lymphatic involvement, and that we find as the first symptom of tuberculosis no evidence of a tubercular focus in the lung, but an induration appearing on the posterior wall of the larynx, this being so superficial that it can hardly be seen; whereas, the original focus in the lung has not yet developed sufficiently to be detected or diagnosticated.

I would make the plea, therefore, that the laryngologist should be consulted at the very first evidence of laryngeal involvement, and if the general practitioner and specialist worked in closer relation to each other, their results might be greatly improved.

Dr. Thomas J. McArthur, of Cordele: I have enjoyed hearing these two papers very much. The subject is very important, because of the fact that until recently the profession has accomplished very little in the treatment of this disease, and a greater number of the profession are not doing what might be done for these cases. I am afraid that too great a percentage of physicians have not undertaken to do what can be done for these cases of tuberculosis. We have a few enthusiasts who are doing some good work, and this Association is indebted to the authors of these papers for bringing the subject before us to-day.

I want to emphasize one point that was made by Dr. Slack in discussing these papers, and that is the question of informing a patient as to the character of his trouble as soon as it is discovered. It has been the custom with people, and sometimes, I regret to say, with physicians, to endeavor to keep a patient from knowing what the nature of his trouble is. That is frequently so in families, and by those who are interested, and sometimes the physician becomes a party to that. That is very wrong, I am sure. It is better for the patient, better for the family, and better for those with whom he comes in contact, that he be informed at once as to the nature of his trouble, so that we can give him the proper instructions and get his co-operation. I simply rose to give emphasis to that point.

Dr. L. G. Hardman, of Commerce: I think a very important thing prior to the development of a tubercular deposit in the lungs, and often prior to the onset of a tubercular laryngitis, is a chronic pharyngitis that is not tubercular. That we do not recognize as early as we should, and for this reason, that in chronic pharyngitis we pay very little attention to that trouble. It causes no pain. We only have a slight clearing of the throat, and

very little attention is paid to it by the physician or patient. But what does it lead to? The constant swallowing of mucus, producing decomposition and fermentation in the stomach, interfering with digestion and assimilation, interfering with nutrition, and we have a patient who is susceptible to attack by the tubercle bacillus. Prior to the treatment of the tubercular laryngitis, we have a chronic pharyngitis that is not tubercular primarily, perhaps never becomes so, but it is a very important matter. We find that patients become emaciated; we are not able to discover any deposit in the lung, or any tubercle bacilli in the sputum. I believe this is the proper time when we should look closely after this class of patients. The physician ought to know something of the disease of the throat, and while I agree that a specialist should be called in, and it may be necessary to have him, still the physician should be sufficiently informed to take the case in hand early.

I did not hear the reading of the papers, and I do not know what was said in reference to climate and locality. In reference to cough, I agree with what Dr. Johnson has said in the main, yet, I must say, I believe, as he believes, that we get deep expansion by coughing, which we would not otherwise get if we suppressed that. In fact, we have dilated air cells; we prevent collapse of air cells; we get more oxygen, and we benefit our patients if they understand deep breathing sufficiently. While I think coughing should be suppressed, the irritation caused by the effort to cough is increased in the larynx, and, at the same time, it has a place and is beneficial more or less in that way.

With reference to deep breathing, this is very important in the open air, but not in a room. Patients whom we suspect to be tuberculous, yet who really have no tubercle bacilli in the sputum, or we can not detect by physical

examination any deposit in the lungs, ought to be encouraged to do deep breathing in the open air, for the reason that it gives them more oxygen; it increases their resistance, and makes them better able to stand in case they come in contact with tubercle bacilli. What I rose to speak of especially was a chronic pharyngitis, which usually precedes the other conditions in these cases.

Dr. C. M. Curtis, of College Park: Dr. Hardman, in speaking of chronic pharyngitis, led me to think that the cough in some of these cases can be traced a little farther back. Dr. Cunningham's remarks with reference to the specialist caused me to think so. We all recognize, I believe, that pharyngitis and laryngitis may be caused by another trouble which dates back several years, although we may pay very little attention to it in undertaking the treatment or cure of a case. I do not know that there is any connection between syphilis and tuberculosis, but I have formed that opinion as a result of my hospital practice. In the negro race, in our Southern States, syphilis leads to tuberculosis, and I believe if we cured more cases of syphilis we would have fewer cases of tuberculosis.

Dr. B. P. Oliveros, of Savannah: I agree with Dr. Hardman that deep breathing is necessary; but the only way to cure a cough is not to cough.

Dr. Hardman: I would like to ask the last speaker if, in the act of coughing, we do not do deep breathing?

Dr. Oliveros: Yes, we do deep breathing, but we increase the irritation by so doing always.

Dr. L. C. Williams, of Columbus: I am going to mention a remedy that is almost discarded, but I know from experience I have had good results in the treatment of tuberculosis by creosote. I recall two cases.

One was a man, fifty years of age, who had several severe hemorrhages. He had become considerably ema-

ciated. I put him on one drop of creosote, which was taken in capsules; I increased the creosote, so that he took twenty-five drops three times a day. That man is living, and is actually cured. I did not undertake anything else, but a liberal diet and creosote.

Another case was that of a young woman. She was a mill operator, a bad place for the development of consumption. I put her on creosote, giving it to her in capsules as I did to this man. She could not take a large dose; but she improved under that treatment, with liberal diet, living outdoors as much as she could, and is living to-day. That was four years ago. She comes to me now and then and says: "I think, doctor, I will have to take creosote." When she takes creosote she improves rapidly. The use of creosote is unpopular, I know, because it has been practically discarded by the profession, but when a man has had success with it he can not help being inclined to think well of it.

Dr. F. M. Cunningham, of Macon: I want to say a word or two in explanation of my position, that where laryngeal conditions arise a specialist should be consulted.

I have had recently the case of a young lady, who had been treated for laryngitis. She came to my office, and I found she had nothing but a slight enlargement of the arytenoid. She had a rise of temperature every afternoon of one-half to one degree. I referred the case to Dr. McHatton, with a diagnosis of incipient laryngeal tuberculosis. Dr. McHatton made a provisional diagnosis and sent the young lady, who was eighteen years of age, to the mountains, with the recognized outline of treatment. She improved immediately, and in the fall returned home. We stopped all forms of treatment, because we thought she was well. She came back to my office recently; I

turned the case over to Dr. McHatton, and it was found that she had a well-marked lesion in the left lung. In this case I made a diagnosis six months ahead of time from the laryngeal condition, and I believe no man could have made that diagnosis from the lung condition alone. Tubercular symptoms were present in the larynx, but were not demonstrable in the lung by any means. There is a position for the general practitioner to take with regard to tuberculosis. If a man is not properly equipped to treat such a patient, when he finds conditions that are predisposing or suggestive of tuberculosis, he should refer the case to a competent specialist. A general practitioner naturally will not recognize the condition in the larynx as quickly as a man who is doing nothing but laryngological work. It is simply for the benefit and consideration of everybody concerned, and more particularly for the ultimate good of the patient.

Dr. C. M. Curtis, of College Park: Specialists are a great comfort to me. I find it very convenient to consult them, and sometimes I feel that I can not get along without them. Sometimes I begin to feel that I am something of a specialist myself. Most specialists are kind enough to let me remain in the case when they are consulted. It works very nicely in that way. This is not only true of tuberculosis, but of nearly all diseases. We know there are men who are expert in treating special forms of disease; men who are better qualified to teach these special troubles than the general practitioner. It is a great advance in the medical profession to have specialists, and it is a great help to the general practitioner to be able to keep in touch with specialists in various troubles. It is better for the community generally that we have specialists, because patients are apt to receive better attention and have a better chance for recovery. I know some

specialists, however, who, as soon as a patient is referred to them, immediately discard the general practitioner and take the case in their own hands. I think we should guard against that. The general practitioner ought to keep his case and have the benefit of the specialist, too. [Applause.]

Dr. Saliba (closing the discussion): The only point I wish to speak of in closing the discussion is this: Dr. Johnson said that cough is an irritation which we can stop by thinking of it. I do not believe that. A nervous cough can not be stopped by thinking of it. Lose sight of it, then you will stop it. The more we think of a nervous cough, or of a neurotic cough, the more we cough. The best way to do is to let the patient forget he has a cough, and, of course, that is the main purpose of giving a sedative of any kind, which is to help the patient think that his cough is not coming back.

I am very glad Dr. Sommerfield took up the subject of home treatment of tuberculosis. His paper was a fine one. We must bear in mind that most of the cases of tuberculosis are practically among the poorer classes of people. We do not care so much for the rich, because they can pay for what they are going to get in the way of treatment. The main thing is to direct our attention to the treatment of the poor patient, whom we meet with every day. We say to these patients, we will treat you as long as we can, and when we find out we are failing in our treatment, then we recommend them to go to Colorado or somewhere else. Now, what is the use of these poor people going out there? They have no money; they have practically nothing. They may have to work for their living, and they go there in a worse condition than they had at first. They have no one to look after them, and Colorado is filled with tuberculous charitable cases. So

far as climate is concerned, I think Georgia is just as good as any other place in the world. [Applause.] Why? If we will take the history of climates in consumption, we will find that every State, every spot, yes, every corner in the world, has been advocated for consumption. Each place has been boosted for a short time; that place becomes filled with the germs of the disease, and then they have to shift to another place. If our patients will do what they ought to do in Savannah or in Georgia, or in any other place, they will do just as well. The only difference is this: A patient, when he pays to do a thing, will do it more freely, and will pay more attention to his case than if he does not pay for it. The climate here is just as good as it is elsewhere. Let us put the patient in the open air; let him do what he does in Colorado, and save him the money, trouble and discomforts of being in a charitable institution. [Applause.]

Dr. J. C. Johnson, of Atlanta: This is a scientific meeting, and no man wants to go on record as making an unscientific remark. The doctor did not listen attentively to what I said, or he misquoted me. I did not say that by simply not having to cough he would not cough. I simply said that which we all wish to bear in mind, and with which I am sure you will agree, namely, that pathology is perverted physiological action, and the nearer we imitate physiological action in the treatment of diseases the more we will accomplish. I said, that inasmuch as cough was an exaggerated expiration, it must be preceded by exaggerated inspiration. If you hinder or restrain that, you accomplish much in arresting irritation. I did not say anything against expectorants or sedatives to control cough.

AUTOINTOXICATION IN ITS RELATION TO NEURASTHENIA.

BY B. P. OLIVEROS, M.D., SAVANNAH.

I feel that many apologies are due from me to the members here assembled for writing upon a subject which, from its title, would indicate my many inequalities for handling it, and yet my only excuse can be that a subject of such vast interest to the medical profession, of such wide importance to the laity, may be discussed by the humblest of us with the hope that one poor little point may be brought forward and attract the attention of some fertile brain.

It is not my intention to go into the scientific reasons of autointoxication or perverted metabolism, for Bouchard and others have undoubtedly proven the doctrine to be a scientific one, but simply to apply the doctrine to a disease or ailment about which just as little is known, about which there is just as much conjecture, and which is of just as much importance to the medical profession to-day as any known disease.

Our attention is attracted daily by death carrying off, in a few hours, individuals who are in the prime of life and the best of health. Whole families of healthy people being made fatally ill by some food which has supposedly undergone some chemical change, or what is called perverted metabolism. So also may I call to your minds another picture of sudden lunacy, murder and suicide, or its minor phases of mental aberrations, perverted dispositions, nervous and muscular breakdowns with all their concomitant line of symptoms, such as loss

of muscular force, weakness and irritability, mental depression, circulatory and digestive disturbances, persistent and insistent thoughts of a troublesome nature, the desire to die or to see others die, that sense of unrest, that mental irresponsibility, or the peculiar phase of a single notion of getting away from an impending death by self-destruction. Such is neurasthenia.

Ever since the sixteenth century have physicians written about this disease, but it was only in 1868 that it received its name. But how little was known about the disease in the sixteenth century, how little in 1868! How little at the present day!

It is generally supposed that heredity may be a predisposing factor, hereditary constitutional condition—anything in an earlier generation that might be conducive to a weakened, nervous system, in fact, one authority says: "Those predestined to nervous disorders may go through life without being attacked by a psychosis or grave organic malady, but they very rarely escape neurasthenia." This, to say the least, is a very broad assertion in the face of present-day observation of the disease, since we know there seems to be no immunity, either by way of constitution or heredity; the strongest man with the best of family histories, the athlete from the family of athletes. No race that is civilized can escape it, and yet it seems we can lay more claim to it as an American disease since it seems to be on the daily increase in this country, probably due to the American manner of living, the hurried and persistent struggle for a livelihood, our mode of education, our strenuous hustle, crowded cities, and want of time for brain rest and recreation. However, it is no longer a disease of the brain-worker, the artist, the professional man; we find it in the high-strung, in the lethargic, in the highest, in the lowest. It no longer seems to be a nervous break-

down from overwork, for we find it in the ignorant, the laboring man, in the working woman.

There must be some other reason than the commonly accepted one of overtaxed brain to account for this condition, so impartial in its findings, so general in its attacks and so common, especially in this, our country. May it not be referred to the present day foods, the many adulterations, our hurried manner of eating them, our abuses of alcohol combined with our strenuous existence? Is it not possible that a malassimilation, a faulty metabolism, has been going on before a mental shock, a grief, a severe sickness of any other one of the many causes given for this disease, which, as I have said, may show itself in any class or grade of persons?

This brings us to autointoxication and especially to intestinal intoxication.

Absorption from the intestine is very slow, likewise does the organism form poison and yet is not poisoned; but when this shock or grief or whatever else happens, it does seem that in some way the absorption is increased, this poison more slowly eliminated, hence a neurasthenic condition due to an autointoxication.

One may not always complain of any inconvenience from constipation, for instance, but at the same time if a person of a constipated habit should get caught just when there is a slow absorption taking place, where there is absolutely no elimination in process, by some great shock or a severe spell of sickness, surgical operation, we all recognize the fact that it is our first duty to correct this constipation, because symptoms immediately show themselves, such as feverishness and nervous phenomena.

So I believe when a healthy, robust person becomes neurasthenic, or develops a case of neurasthenia, there has been going on a slow absorption, a chronic autoin-

toxication which has been paid no attention to until the direct cause, the shock, the grief, the sudden loss of wealth, or the breaking down of an overworked brain strikes the person who presents the fertile ground.

It is on account of this unsuspected self-poisoning, this perverted metabolism which is constantly going on within so many of us that the world is so full of neurasthenics.

As the healthy man is not attractive to the microbe of any disease, so is not the non-absorbing or self-intoxicating man subject to a neurasthenia when the blow falls.

We know that fecal matter is toxic, it makes no difference what this toxicity may be due to. We pay no attention, in this paper, whether it be ammonia or potash, or the union of what organic principles, the fact remains that it is toxic and that absorption takes place through the intestines.

It is said by many that constipation is compatible with health, that where there is constipation there is less chance of absorption, owing to the hardness of the fecal matter, or because when there is constipation absorption has been completed; be this as it may, I believe that there is much truth in this supposition; in other words, I believe there is much less danger in the constipation than there is in the putrefaction of this same fecal matter; by that I mean the metamorphosis of digested matter and also that which the intestinal tube itself offers us, the constant presence of micro-organisms and the putrefactive agents carried in with the foods themselves.

We know that the small intestine, and more particularly the large intestine, is capable of sending putrefactive material into the blood. We also know that bile, where it is not at fault itself, is capable of prolonging the arrest of fermentation; at least, it does so, to a small ex-

tent, in the small intestine, but it certainly can not do so in the large intestine.

There is no doubt that there is a constant tendency in the organism to toxemia from accumulation, but at the same time nature has provided the emunctories as a constant safeguard. As regards the absorption from the digestive canal we have the liver offering us an active barrier. The organism forms poisons and yet is not poisoned. The liver stops some of them and the rest are eliminated by the emunctories.

It is not my object to go into the many phases of autointoxication, such as the toxicity of urine or the causes of this toxicity, the pathogenesis of uremia, the poisoning by tainted meats, autointoxication by bile or pyocyanic disease, the lungs or any of the other means of intoxication, but to refer only to intestinal intoxication or that metabolic change which seems to take place in the intestines, which not only forms the groundwork for neurasthenia, but which seems to be increased by that disease and likewise this metabolic change seems to increase the neurasthenia, aggravate its symptoms and prolong its existence, showing an inseparable connection between the two. In other words, I believe that there is a condition or phase of autointoxication called neurasthenia, that neurasthenia is not a disease in our nomenclature, but only a group of symptoms found in intestinal toxemia.

I have had occasion to study this subject of late from observation in several very intelligent patients. In no instance have I found my patient of an inherited predisposition; they have varied in their station of life. In neither case have I had nervous breakdown from an overtaxed brain, but for no seemingly special reason they have developed neurasthenia and apparently only from a climax of some cause going on within themselves.

I have always been unable to arrive at any history except a defective nutrition had been noticed for some time back, followed by a sudden breaking down and a complete development of the disease; and in two or three instances with a direct cause of grief or shock of some kind. I have noticed in all cases that there is some intestinal trouble, such as chronic constipation and intestinal dyspepsia, or some irregularity in the digestive system; but, I have never found in any marked case of neurasthenia a dilatation of the stomach. Some authorities lay great stress upon this one point, referring to it as the prime factor in all nervous troubles, and the great cause of all toxemic conditions. There is no doubt that where we have a dilatation of the stomach we have besides many other things, a marked melancholy, loss of appetite, restless sleep, etc., but this is to my mind a very different thing to what is commonly known as neurasthenia. In contradistinction to dilatation of the stomach I will put greater stress on one point. One of the prime factors and most frequent accompaniments of this very peculiar disease is enteroptosis. It has been my observation that a ptosis of the bowels can be found in nearly every case of neurasthenia, thus bringing in closer touch the relationship between intestinal intoxication and the above disease. It can readily be seen that where there is enteroptosis there must necessarily be a new and prodigious source of the absorption of toxic material. It is here that we have loss of peristaltic action, constipation or even a terrific intestinal dyspepsia, collection of gases, diarrheas that are absorbed of all fluids until the fecal matter has become hard, or more particularly do we here find a condition of the intestine where putrefaction of the fecal matter is more apt to take place than in any other condition known. I have many times noticed that where there is an enteroptosis there is not a

constant falling down of the bowels, but at times they seem to resume their normal position, and in neurasthenia this can be easily recognized, or the attention of the physician attracted to it by the improvement of all the neurasthenia phenomena; that is to say, when the intestines resume their position the autointoxication seems to cease, or at least, to moderate to a marked degree. In fact, in neurasthenia everything points to this intestinal toxemia. It will always be noticed that when the patient is specially bad off or there is an aggravation of the symptoms, there is everything pointing to an excessive absorption from the intestines, as exemplified by less urine, putrid actions and a want of elimination in general.

It is just here that it can be observed that there is a peculiar fecal matter of a red-brown color. I have had patients to complain of the burning sensation during defecation and of the peculiar chicken coop odor. In further proof of the dependence of the one disease upon the other a very valuable point is, the power of intestinal antisepsis to correct the symptoms, or of a dose of calomel to most decidedly improve an aggravated attack of the condition, thus showing that we are treating an intestinal autointoxication, that our great barrier, the liver, has been at fault, that the bile has not been assisting fermentation, that the emunctories have not been doing their duty and acting as safeguards, that absorption has been in progress and autointoxication resulting as indicated by the increased nervous breakdown.

THE DOCTOR IN RELATION TO EXERCISE AS A FACTOR IN MEDICINE AND SURGERY.

BY THEODORE TOEPEL, M.D., ATLANTA.

We are living in a period of progress which has reached every sphere in life. So bewildering has been our rapid development that we have reached a stage in our existence where, while we question the possibility of future progress, we are yet always ready to accept anything which even we, with our greatly dilated imaginations, could not have conceived of a short time ago. It seems that our generation has set itself the task of proving that there is nothing new under the sun. We can all point with great satisfaction to the honored colleagues of our profession, medical and surgical, who have probably done as much for the improvement of mankind as have the representatives of all other sciences combined. Owing to new discoveries, medical science is continuously and rapidly enlarging its scope.

Our life has become more and more artificial and justly do we hear the cry from every far-sighted lover of mankind, medical and pedagogical, "Go back to Nature." Where fifty years ago drugs were universally administered, they are to-day being less frequently given and their place is to a great extent taken by more rational means to be classed as physical therapeutics, namely, electricity, baths of water, hot air and light, massage, medical gymnastics, exercises in apparatus, etc.; but as the title of my paper calls for the discussion of the subject of "Exercise," I will confine my remarks to this alone.

Very few physicians who recommend "physical exer-

cise" as a therapentic measure have any idea of dosage and physiological limits of the work. Physical exercise, closely related to medical science, is an eligible sister to the family and deserves a place in the curriculum of our Southern medical schools, where intelligent instruction as to its aim in the medical profession will eradicate many of the difficulties with which the physician must contend. Many a young man and woman there is whose health has been undermined by the results of careless advice on the part of their counselor, the doctor, to take exercise, and on the strength of this authoritative statement has fallen a victim to one of the many advertised six weeks cure for all diseases, 25-dollar-down *systems*. It may even have been that the physician giving this advice is himself a victim of the cartilage, deep breathing, no-breathing, etc., systems. Such conditions would never exist if every graduate of an up-to-date medical school would know enough about the dosage and physiological limits of muscular work to be able to write out a series of exercises as the physical condition of his patient may require. See the phenomenal success with which the osteopaths have met in this community. Could this have been possible had the surgeons recognized the value of exercise in sprains, contracted ligaments and convalescent fractures, the neurologist in neuritis and nervous prostration, and locomotor ataxia and the physician in chlorosis and constipation and selected heart affections? No, never! Exercise is only a rational measure which is monopolized by these people, yet it rightly and justly belongs to the medical profession and should be used by every physician and surgeon in selected cases, but it is unfortunately or fortunately, as we may take it, misused by the osteopaths.

The orthopedic surgeon needs exercise and massage in his corrective work. Lateral curvature of the spine is

no longer treated by braces exclusively, but by gymnastics, sometimes in connection with other measures, it is true, but always by exercise in some form. Exercise is indeed indispensible to the successful work of the orthopedic surgeon. The conscientious and progressive physician of to-day can not afford to give unintelligent advice in regard to exercise, leaving choice of exercise to his patient just as little as he would direct him to go to a drug-store and indiscriminately select his drugs himself.

In a few words I shall explain the physiology of exercise and its therapeutic applications by the physician and surgeon.

By bodily exercise from our standpoint is meant, progressively arranged and methodically executed movements, involving mainly the muscles and joints, indirectly affecting bones, nerves and organs with the object of correcting and perfecting the human organism from the point of view of strength, skill and health. This is done, either alone in a suitable position or with the assistance of others. The system of exercise is divided into—

1. Passive,
2. Active,
3. Resistive.

1. *Passive exercise* arises when one or more persons perform a movement, with, or on some part of the patient's body, without the patient by means of resistance or in any other way assisting in the performance of the movement.

2. *An active exercise* is one which the patient himself, by his own strength, performs independently. This is again subdivided into *gentle, moderate* and *violent* exercises and is governed by the patient's physical condition.

(*a*) A *gentle* exercise is one by which a patient of

average strength, after performing experiences neither fatigue nor breathlessness.

(*b*) When the exercise has caused local fatigue without inducing breathlessness it is termed *moderate.*

(*c*) An exercise is *violent* when it is accomplished and followed by breathlessness.

3. *A resistive exercise* can be performed in two different ways.

(*a*) The patient performs the movement while the operator makes a resistance suitable to the strength of the patient and to the desired effect. This movement is termed concentric or shortening.

(*b*) The operator performs the movement with a part of the patient's body, while the patient makes a resistance. This is termed eccentric or elongation movement.

From the foregoing it will be seen that dosage of exercise depends upon individuals. With some patients a considerable muscular expenditure is necessary to bring about an expansion of the vital forces due to active congestion. These are the strong natures accustomed to exercise. With feeble persons accustomed to complete rest and to muscular inactivity, the least movement, the shortest walk produces a similar result. I wish to impress upon the physicians the importance of proper dosage of exercise. Irreparable harm is daily done by injudicious prescriptions of exercise given by people who have no knowledge of the physiological capacity of the organism or by those who know nothing of the progression of exercise, ignorant of the amount of effort it requires to execute certain movements with their consequent physiological effect. The local effects of exercise may be briefly stated to be:

1. Increase of blood and lymph circulation.

2. Increase of both constructive and destructive tissue change.

3. Absorption of waste or effused products.

4. Development of the muscles, ligaments or other structures acted upon.

5. Increased heat production and tissue respiration.

6. Reflex or sympathetic effects upon the vasomotor and through them upon the large internal organs, the liver, spleen, stomach, intestines, kidneys and the general glandular system of the whole body.

The practical uses of exercise or therapeutic application of it are numerous. Rarely ever do I pick up a medical journal where some instance is not given whereby exercise in some form has not been advantageously used. Following are some of its uses: It is a measure par excellence for disorders of nutrition, because the general nutritive processes of the body are influenced in a most powerful degree. Anemia and chlorosis are more rapidly and permanently cured by exercise in the open air than by any other form of medication. In the treatment of muscular rheumatism exercise in the form of massage not only relieves the pain accompanying the disease, but also antagonizes the muscular atrophy which is one of the most constant results. Massage is also very beneficial in articular rheumatism, it relieves the pain through its derivative action and also promotes the absorption of effused inflammatory products and restores lost mobility. Other physicians, as well as I, have found that massage, passive and active exercises, in the order mentioned, are useful in arthritis deformans, also that they have given excellent results in the arthritic neuroses, which are so often the result of acute and chronic inflammation and injuries to the joints. Massage of the prostate as presented in a paper to the association by Dr. Champion two years ago, has afforded valuable results in certain cases of enlargement of this organ as the result of inflammatory condition. Massage and active exercise

influence the digestive functions by driving onward the intestinal contents. An exercise which brings the abdominal muscles into action is thus favorable to defecation and can cause the disappearance of digestive disorders due to constipation.

Dr. G. L. Meylan, New York, claims that muscular exercise judiciously prescribed and practiced is a valuable agent in the cure of many forms of cardiac inefficiency. Athletic sports, when practiced without medical supervision, produce more or less permanent cardiac injuries in weak and untrained individuals. The difference in pulse between the horizontal and vertical position is a useful sign in the physical diagnosis of cardiac conditions. The adaptability of the heart to suddenly increased work, as measured by the change in pulse rate after muscular exercise, is a valuable indication of cardiac efficiency. Among the most striking effects of muscular exercise are the changes in the muscles themselves under the influence of work. The muscles increase in size, and their structure is at the same time changed, they lose the fat which infiltrates their fibers, and tend to be reduced to their own proper elements. The muscular fibres, the density of which being greater than that of other tissues, give a characteristic firmness to the region which works. Contraction draws to the muscle a greater quantity of blood, and the increased flow continues even when the work is over.

In muscular atrophy, whether resulting from neuritis or from disease of the cord, passive exercise of the muscles, especially friction, is a measure of the highest value, affording, in fact, the best of all known means by which the nutrition of a muscle may be maintained while regeneration of the connecting nerve structure is taking place. Chorea, writer's cramp, wry-neck and other maladies in

which irregular muscular action, or spasm, is a leading symptom, are more amenable to massage treatment than to any other therapeutic means. Such disorders as facial neuralgia, lumbago, sciatica and crural neuralgia also yield to general and local massage.

Dr. Frenkel has succeeded in combining in his system of physical exercises the re-education in walking with that of equilibrium and maintenance of movements of the trunk, and the walk that he teaches is effected in such a manner that while insuring the maximum of stability with the minimum of effort it serves at the same time, and with slight modification for walking up and down hill, on the level, or on the irregular ground, all points which the ideal walk and the military march fail to accomplish. Frenkel has fixed on a method for the compensatory treatment of the ataxia of tabetics, taking into consideration not only the motor disturbances of the arms and legs, but also the incoordination of the trunk, the defects of sensibility, the insufficiency of the inspiration of micturition and defecation, the difficulties in equilibrium and the sense of position, completely modifying the health and duration of the life of the tabetic, and the prognosis and the evolution of tabes.

Notwithstanding the fact that the ancient traditions of the profession require absolute rest of the affected parts after injury of the bones or joints, so many authoritative statements have been made respecting the utility of massage in both fracture and sprains, asserting that this measure has been accepted as one of the most valuable means of dealing with the traumatic effects resulting from accidents to the bones or joints. Massage applied early, and with a suitable degree of skill and perseverance, effects a more speedy cure in both sprains and fractures than absolute immobility, the retentive apparatus being

usually removed and replaced daily. It prevents both the loss of movement, which usually occurs, and the muscular atrophy, which is the natural result of absolute rest and immobility. The prevention of exudates, or their early absorption, may be mentioned as other valuable results of passive exercise in this class of cases.

In conclusion, I wish to say that every physician should know something of the method of physical exercise, and should avoid vague expressions, such as "out of door life," "muscular exercise," and so on, when consulted as to the propriety of exercise in an individual case. Give your patients the advice in regard to physical exercise that they expect to receive from you, and the danger will be forever removed that they fall into the hands of some preposterous humbug.

METHYLEN BLUE IN THE TREATMENT OF CANCER.

BY HENRY R. SLACK, M.D., LAGRANGE.

Cancer has the whole world for its field, and destroys all sorts and conditions of men; while more common among the old, the young are not entirely exempt, as Osler reports six cases of cancer of the stomach in the first three decades of life.

The wise old father of medicine, Hippocrates, writing about 400 B. C., has this to say of the treatment of cancer: "The deep-seated forms are best untreated, for if treated the patient soon dies; otherwise he might hold on for a long time." Inaccessible cancer is two and a half times more frequent than accessible; therefore, any treatment that gives reasonable assurance of prolonging life and not shortening it, as was the case in the days of Hippocrates, is welcomed by the physician, and is a boon to suffering humanity. Especially is this true when the administration is as simple as the one that I will present today.

Ten years since I read a paper before this Association entitled "Blue Pyoktinin in the Treatment of Inoperable Malignant Growths." This paper was published in the Journal of the American Medical Association, June 27, 1897, and was pretty widely commented on. Shortly after this the X-ray began to be applied in the treatment of cancer with such success that all other methods, except surgical, were completely eclipsed by this new and wonderful light that possessed such marked therapeutic power.

The novelty of Roentgenization had not worn off before the discovery of the new element, radium, added a still more mysterious weapon to our therapeutic armamentarium. The extravagant claims of the users from the radiations of this new element have not been borne out by the experience of careful clinicians, and we are again turning our attention to some of the older methods. Even Dr. Willy Meyer, of New York, who first introduced blue pyoktanin in the treatment of cancer in America, seemed to have been carried away by the new agents, but not so with that sturdy old nestor in therapeutics, Dr. Abraham Jacobi. He has kept quietly using in his immense practice methylthionin hydrochlorid, as it is now called, or methylen blue, in the treatment of inoperable malignant growths, until he has now treated 150 cases, as reported at last meeting of American Medical Association in Boston.

Herbert Spencer says that our judgment is based on our personal experience. My personal experience with methylen blue has been very satisfactory, though I have had to abandon the hope, expressed in my paper ten years ago, of effecting a cure by its use alone, still the benefits derived are so pronounced that I feel justified in continuing its administration in such cases.

I have found the treatment then used quite painful, so have abandoned the technique suggested by Von Mosetig and Willy Meyer of parenchymatous injection of a two per cent. aqueous solution, for Jacobi's of simple administration by mouth. I give a tablet containing methylen blue, 2 grs., extract of belladona, ¼ gr., each, after each meal. If there is an ulcerating surface accessible, I dust it with a four per cent. or five per cent. powder, or use a two per cent. injection daily. I also use the X-ray if on the surface, breast, or face, as I have seen a number of

cures follow the careful, judicious application of Roentgenization.

I reported five cases in my paper and have since treated twenty-nine, but will give only three, as they are fairly representative.

Case 17.—Mrs. M. E. B., age fifty-six, widow, had nine children; three miscarriages. Complains of large and painful lump in right breast and under arm. Family history negative. Personal history, had usual diseases of childhood; menstruation, thirteen years, regular, and passed the climacteric in forty-eight years without incident. Has had typhoid fever, pneumonia, and malaria. Health not good for last seven years. Present trouble started in October, 1899, with lump in right breast, but did not give much pain or grow rapidly until January, 1903. Appetite good and bowels regular.

Examination—Fairly-nourished woman, heart and lungs negative, has tumor in right breast as large as goose egg, adherent and nipple retracted, axillary glands indurated. Case went to St. Joseph's, Atlanta, for operation, but surgeon said was inoperable carcinoma.

Treated with X-ray for ten weeks. The indurations in axilla entirely disappeared, and tumor in breast reduced to size of chestnut. She then left me, and I did not see her any more until February 1, 1904. She had been treated by a local physician with X-ray, and had bad burns, which had to be healed before treatment could be resumed. After six weeks she was in fine condition.

October 25, 1906, she returned very feeble and cachectic, with a foul ulcer above the nipple over an inch in diameter, and also two ulcers in the axilla. The arm was very painful, much swollen, and could not use it at all. This time we used the methylen blue tablets internally and applied the powder to the ulcers daily, as well as X-

ray to it occasionally. Her improvement was marked, and she is now free from pain and doing nicely, though not cured.

Case 21—J. W. M., age forty-six, male, farmer. Complains of sore on lower lid of left eye. Family history: Father had a similar place. Personal history: Has usual diseases of childhood; denies venereal disease; general health good. Present trouble started with crust and scab over two years ago, and had gradually grown larger until now it is larger than a dime. Appetite good and bowels constipated.

Examination—Well-nourished man, heart and lungs negative. Has epithelioma size of dime under left eye. Treated with X-ray three times a week for six weeks and ulcer reduced in size to a grain of wheat and gave no trouble, but never did heal or disappear until used methylen blue internally and applied the powder to surface. Has now been well several months.

Case 26.—L. J. N., age forty-six, female, married, one child. First consulted me thirteen years ago for dysmnorrhea and sterility. Found stenosed cervix. Dilated, and ten months afterwards she gave birth to a fine girl. Did not see her again until nearly five years later. Was then complaining of pain in back, leucorrhea, etc. Examination showed lacerated cervix, with ulceration.

January, 1907, her husband said she was "Mighty bad off, sick in bed, suffers all the time and bleeds a great deal."

Dr. McCall, my assistant, called to see her and found exfoliating carcinoma of uterus, involving the vaginal walls and inoperable. He gave methylen blue and an injection of a two per cent. solution daily. She is now up, free from pain, and able to do her housework.

I have selected these three cases, not because they have

given the most brilliant results, but because of their peculiar interest.

Case 17 had been pronounced inoperable carcinoma of breast over four years ago. Had yielded for a time to X-rays, but after several burns tolerance was established and the disease spread, causing much pain and destroying health. Upon administering and applying the methylen blue the disease again yielded, and the patient is now enjoying fairly good health and is free from pain.

Case 21 was an epithelioma of left lower lid, which was benefited by X-rays, but did not get well until used the methylen blue.

Case 26, carcinoma of uterus, following laceration of cervix, which is being arrested by administration of methylen blue alone.

Of the twenty-nine cases treated with X-ray, or combined with methylthionin hydrochlorid, twelve have been dismissed as cured, and five have gone over three years without recurrence. The other seven, ranging from five to thirty months since dismissal, show no evidence of return. There are nine still under observation, seven of whom are doing fairly well, as the disease is in abeyance, they suffer very little and are able to attend to their usual duties.

Of the twelve cases cured, eight were epitheliomas, three carcinomas, and one was sarcoma.

My experience with the methlythionin hydrochlorid teaches me to expect the following results: 1st. Everything with which it comes in contact is stained a deep blue, the urine soon looks like blue ink, and you should always tell your patient to expect this. 2d. There is surcease from pain. 3d. The general health of the patient is improved, and years are added to his life.

It thus helps us to carry out the noble aim of our profession, "To alleviate suffering and prolong life."

LITERATURE.

Journal of American Medical Association, June 27, 1897.

Journal of American Medical Association, June 9, 1906.

Journal of American Medical Association, November 10, 1906.

Osler's Practice of Medicine, 6th edition.

DISCUSSION ON DR. SLACK'S PAPER.

Dr. W. J. Bryant, of Summerville: I consider this an important paper for the country physician. I saw Dr. Jacobi's report, which Dr. Slack speaks of, and it impressed me very much. I had a case of sarcoma of the right external malleolus in a woman, sixty-five years of age, where an amputation would probably have resulted fatally. I have been treating her for one year with methylen blue, and have held the disease in abeyance. She has, in fact, improved, and I simply wish to add this one case to the others.

Dr. J. A. Combs, of Locust Grove: Speaking of using the X-ray in these cases of cancer, if we use the X-ray at all the sooner we do so the better. When these cases of cancer are inoperable, the country doctor should try either the use of the X-ray or methylen blue, as advised by the essayist.

Dr. Thomas J. McArthur: The fact that such excellent results can be secured in treating these cases of cancer with methylen blue, as spoken of by the essayist, proves conclusively that it is a valuable means of treatment, and especially so in inoperable cases. The results that have been secured from this method of treatment justify its continuance in inoperable cases.

Dr. F. G. Underwood, of Maysville: From what one

of the previous speakers has said, it has been the rule of the country doctor that if he gets a case of carcinoma or epithelioma he wants to get rid of it as soon as possible. He refers the case to a surgeon, or to somebody else, because he considers it incurable. Now, if this treatment that Dr. Slack has given us this morning has proved so successful in his hands and in the hands of Jacobi, why may it not be used with equal success by the country practitioner? I am one of those who are ready to take hold of a good thing and discard all bad things, if I know how, and this treatment must be a good one because every case that has taken it has been benefited, and when a patient fails to be benefited by it he dies.

Dr. Slack (closing the discussion): I do not wish to be understood as recommending this treatment in those cases that can be relieved by operation. My remarks had reference more particularly to the inoperable cases. I mentioned one case that had been rejected by surgeons on account of inoperable carcinoma, and a surgeon told the patient's brother that the most favorable prognosis he could give was that she would live for about nine months. She is still alive, it having been seven years since the surgeon made that statement.

Dr. Jacobi, at the Boston meeting of the American Medical Association, stated that he had treated about 150 cases, with such results as I have mentioned, ranging from three to seven years. The beauty of the treatment is that when it gives out, it does so promptly. When the methylen blue loses its power, the patient is likely to die in six weeks.

A PRELIMINARY REPORT ON THE RELATION OF ALBUMINOUS PUTREFACTION IN THE INTESTINES TO ARTHRITIS DEFORMANS (RHEUMATOID ARTHRITIS, OSTEO-ARTHRITIS): ITS INFLUENCE UPON TREATMENT.

BY C. R. ANDREWS, M.D., AND MICHAEL HOKE, M.D.,
ATLANTA.

It appears to us best, in the consideration of this subject, to present the histories of a few cases, and then briefly the deductions which we have been able to draw from them.

CASE NO. I.

This patient was the first case of chronic arthritis to be placed upon fermented milk. This was in May, 1904. This young lady had had chronic deforming arthritis for nine years. She was twenty-four years old at the time of entrance to the hospital. She was bedridden, unable to turn herself without assistance. The emaciation was extreme. The spine from occiput to sacrum, the elbows, the wrists and hands, the hips, knees and ankles were involved. Some of the fingers were movable, the joints of some were flexed. The wrists were much enlarged, the periarticular swelling being chiefly around the dorsum of the wrist and in the tendon sheaths. The hands were abducted and flexed at the wrist. The carpal ends of the radius and ulna were enlarged. One elbow, in which there was very little motion, was flexed to a right angle. The other was enlarged. The

legs were flexed at the knees to a right angle. The condyles of the femora jutted over the ends of the tibia so much was the subluxation of the head of the tibia backwards. The joints of the knees were obliterated. Much of the upper end of the right tibia had been absorbed. The upper end of this tibia had been dislocated outwards, as well as backwards. The knees were not swollen. The ankles were very much swollen and edematous. The skin of the right foot was scaly. There was much scaly skin about the toe nails. Both big toe nails were suppurating at their bases. There were large sores on the legs below the knees and upon the feet about 1½x2 c. c. The sores had been present for months. There was very little motion in any part of the spine. The patient lay helpless in bed with an anxious, pained expression, turning the eyes to you, but never the head. She was in much pain all the time. The hips were flexed and both thighs deflected to the left, the right overlapping the left. The skin was pigmented, the face swarthily "bilious." The skin over the thorax tightly drawn and without appreciable subcutaneous fat, brownish in color, without healthy glow. The ribs were almost rigid when she breathed. The abdomen was distended and tympanitic. The right kidney was enlarged, tender and easily palpable. The radial arteries were hard and easily palpable. The temperature daily was 99 to 100 and sometimes 101. The pulse was rapid, this condition of affairs having existed for several years. Chronic nephritis was present. This patient was kept on fermented milk and peptonized milk for one year. The administration of the milk and laxatives constituted the treatment. Gradually the pain went away, in six months the temperature became normal, never in the day going above 98½. Gradually the pigmentation of the skin disappeared, the skin becoming pink. The pained, anxious

expression gave way to a restful appearance. A pad of subcutaneous fat appeared; the breasts developed to some extent. All the periarticular swelling in the wrist, one elbow and in the feet and ankles disappeared and the obstinate sores healed. To-day the deformities are still present. The knees can not be helped, the legs should be amputated above the knees. The wrists and elbows are susceptible to improvement by operation, but she refuses these measures. She is helpless from the joint destruction which had occurred before she came under observation. All inflammation in the affected parts has disappeared. She looks well as she lies in bed. This is a case of chronic arthritis presenting bone absorption, bone hypertrophy, flexion and extension deformities, periarticular and peritendinous fibrous tissue spindle shaped swellings whose symptoms, temperature, soft tissue swelling disappeared from a fermented milk diet. The hopelessness of the picture above is sufficiently familiar for it to be fair to state that the fermented milk accomplished an unusual improvement. She still has nephritis. No examination of the feces was made in this case. It illustrates nothing by the disappearance of periarticular swelling, temperature, pain, toxemia in this extremely bad case of chronic arthritis.

CASE NO. 2.

Disease began in 1904 with swollen, red, tender, painful knee. This was followed by involvement of both shoulders, hands and wrists, left knee, both ankles and right elbow. Entered hospital September 18, 1906.

Examination—Can not stand. Helpless. Can sit up when placed in a chair. Emaciated. Skin pigmented of yellowish hue. Skin tight over thorax. Heart normal, but rapid pulse 104. Liver dullness normal. Spleen not pal-

pable. No glandular enlargement. Lungs normal. All teeth gone but lower incisors; gums swollen; receded from roots of teeth around which there was detritus and suppuration; three or four decayed roots of molars were present.

She can hardly move the fingers. Heberden's nodes on the left thumb, index and middle fingers. Little motion at the carpophalangral articulations. Unable to touch the ends of the other fingers with the thumb. Flexion and hyperextension deformities of the fingers (as shown in photograph.) There is atrophy of the interosseous muscles. The wrists are very much enlarged by periarticular and peritendinous thickening. The ends of the radial and ulna bones are enlarged. Almost no pronation and supination of the hands and forearms. All movements of the fingers, hands and forearm whether passive or active are very painful. Elbows and shoulders painful but not swollen.

The dorsal spine is almost stiff. Motion limited in lumbar region. No deformity of hips, which are movable without pain. Both knees are slightly flexed and swollen. but no tumor formation felt. There is a large osteophyte on the tibia above and to the outer side of the tibial tubercle.

Both ankles were very much swollen, tender and painful on motion. The right foot is flat and spastic, adduction being especially painful. There is general muscular atrophy.

Examination of stomach contents: Practically no alteration in amount of acid secreted.

Examination of Urine Sp. gr. 1010-1013; no albumen or sugar; occasional hyaline casts; chlorides, phosphates, sulphate and urea all within the limits of normal; purin bases and uric acid normal; indican was present in in-

creased amount in all specimens; about forty different specimens were examined.

Examination of stools from Schmidt and Strasberger diet: Alkaline and foul. Microscopic—masses of fibrous tissue in stool, showing stomach digestion to be impaired. Mucus present in greater or less amounts containing no epithelial cells or leukocytes. Fats and starches digested normally. No unaltered bile.

Examination of blood: Hemoglobin 65 per cent; reds 3,960,000; white cells 6,000.

Stomach dilated and walls atonic. The intestines are distended with gas and the abdominal wall very lax.

On "regular diet" from September 18th to October 22d, temperature usually normal, sometimes going to 99½. Stools constipated except when purgatives were given. No change in condition during this time.

On October 22d, milk fermented with the B. lacticus and an yeast was begun; three quarts in the twenty-four hours being given. At the same time a morning laxative was given.

November 15th, patient asked to describe how she felt: "I do not have the heavy feeling that I had. There was constant pain as if the bones were crushed. Before (before she was put on fermented milk) I had spasmodic pains which jerked the limbs. I never have them now. At times I have a drawing feeling in the hands that is not pain. I do not suffer except at times, when I have an aching feeling, not pain, which seems more in the muscles than bones. I never have headache. I had it always formerly. This improvement has come very gradually only since having been on fermented milk. Rest well at night. Before I could not sleep at night."

Examination: Skin has cleared up a great deal; pigmentation has disappeared. Skin is peeling on the hands;

the right hand can now be flexed and extended, pronated and supinated with very little pain. The same movements can be executed with the left hand with no pain. Can now touch the tips of the fingers with the end of the thumb. The abdomen is not distended. No tympanites. There is hardly any swelling in the knees and ankles. These joints can be moved considerably, both actively and passively without pain. The swelling about the carpophalangeal, the mid phalarngeal and wrist joints have reduced extraordinarily.

Stool: Slightly alkaline and clay colored; typical milk stool.

From November 15th to February 9th, this patient was kept on fermented milk. Not once did the temperature reach 99 during this period. The patient's condition steadily improved so that by February 9th she was walking without crutch or cane over the hospital; was writing letters; was without pain except a little now and then; not sufficient to worry her in the least. All the soft tissue thickening around the joints had absolutely disappeared.

During this time the urine failed to show evidence of albuminous putrefaction.

On February 9th she was put on general diet with the exception of meat and eggs. She was kept on this diet until March 21st.

March 21st note: For about two weeks after she began on general diet she was in same almost painless condition as when on fermented milk. Then she began to suffer. Several days ago and yesterday the pain was so great she wept. Had some pain all over, but it was most severe in knees and ankles.

General appearance good; better than before. Wrist joints are again swollen though nothing like as much as

originally. Right hand supple, left somewhat stiff. Fingers are stiff every morning. Abdomen very much distended. Well-defined amount of subcutaneous fat. Arms are larger. Some swelling in ankles. Knees and ankles perfectly flexible. No limitation of motion in back. Free motion in neck, but accompanied with pain. Last two days temperature reached 99, being this high only three other times since February 9th.

April 10th note: Patient has been on fermented milk since March 24th. Gradually she becomes comfortable again. She has no pain except early in the morning, when she feels a little sore.

The urine and stools have been constantly examined. It is not necessary to record them all here. A few records will indicate what was found in these examinations.

Stools: From a large number of examinations they were always foul and alkaline except in three instances, in two of which they were neutral and once acid.

Urine: In the beginning there was a marked indicanuria; shortly after she was put on fermented milk; the indican remained very slightly above the normal for about six weeks, when it began to increase, and it has remained high since with the exception of two or three examinations.

CASE NO. 3.

Age twenty-seven; married. Present history: When seventeen years old, five feet, eight inches high, weight one hundred and seventy pounds. Was very strong and active until 1901, having been an athlete and never having had any disease except whoopingcough, chickenpox and measles. In the summer of 1901 began work in a railway office, confinement was very close, he some times being obliged to work all day and night. He

ate very irregularly; bolted his food; sometimes eating four or five times a day when working late. On September 1, 1903, he was taken with "sciatic rheumatism," the left hip and thigh being affected. Was unable to walk for ten days and suffered great pain at first, morphine being necessary for relief. After ten days was able to walk with crutches. After being up for ten days was apparently well except weakness. Was married in October, 1903, and stronger until November, 1903, when he arose one morning with a "crick" in the neck. In July, 1904, went to Hot Springs for treatment. Then he began to suffer a great deal with headache in the front part of the head, and could find no relief except by lying down on his right side. Was benefited very little at Hot Springs, if any at all, although headaches did not seem to come on so frequently. Was at Hot Springs seven weeks. From October, 1904, to July, 1905, he suffered very little except when he tried to move his neck, this pain being in the back part of the neck, very close to the skull. He states that he feels "hard lumps all in a row," one on one side and one on the other side, and one in the middle at the back of the neck. The soreness was mostly in the lumps, though of course all the muscles in the neck were affected. In July, 1905, he noticed a weakness in the small of the back and in the hips. In September, 1905, was laid up for a week with severe pain in his legs. At this time he weighed 118 pounds, a loss of thirty pounds since November, 1903. He then became so weak that he had to stop work altogether. November, 1905, went to camp in Florida. Back got rapidly worse; neck about the same as it had been, that is, giving no pain except when moved. His throat got bad, and he had choking spells, frequently one or two a day. He had symptoms of this trouble before he left Jackson, Miss., 1905. The spells

usually came on while eating, but not every time. They became more frequent up to January, 1906, coming on between meals, accompanied with vomiting. These spells were due to paralysis of the palatal muscles and regurgitation of food up the vault of the pharynx, the food sometimes coming out through the nose. In May, 1906, he weighed 108 pounds.

Examination: He is extremely emaciated; weight ninety-eight pounds; his complexion is very sallow. There are liver-colored pigmented spots both on his face and body. His breath is very foul. He talks with a somewhat guttural intonation. Walks very slowly, without bending the body in the least and with the spine perfectly stiff. He makes no effort to turn his head, and when wishing to speak to any one at the side, he turns his eyes without turning his head. When he takes a seat, he grasps his chin with his hand, in order to relieve the neck of any jar. His skin is tight over the chest and there are pigmented areas. His left ankle is swollen; both knees are slightly swollen. He is extremely weak. Pulse 115 to the minute; pains in the legs; when he lies down he can not get up without assistance, on account of the pain in the back of the neck.

Skiagraph shows osteophytes on the cervical vertebrae; deposits of bone along the spine in the dorsal region; spurs of bone at the attachments of the ribs to the spine. A skiagraph of the lumbar region shows in two or three places small spurs which almost form a bridge across the margins of the intervertebral spaces.

There is decided enlargement of the lymphatic glands in the groins, axillæ and neck.

Stools: On a Schmidt and Strasberger diet the following was found: Reaction alkaline; odor very foul; fats normally digested; starches only fairly well digested; fer-

mentation test negative: bile not present—unaltered: small particles of fascia seen microscopically together with small particles of potato and mucus.

Urine: Sp. gr. 1007, 1011, acid, albumin and sugar negative; phosphates 26 g., urea 14 g., albumose, neg., indican present in increased amount in all specimens.

Blood: Hemoglobin 60 per cent.; red cells, 4,448,000; white cells 13,200, hemoglobin two weeks later 70 per cent.

Weight at present 111½ pounds, a gain of 13½ pounds from August, 1906, to March, 1907, and still gaining. The neck at present seems about the same as when first affected. It does not hurt except when he tries to use it. His throat gave him scarcely any trouble, though it seems to be paralyzed on one side; in fact, his right jaw and the right side of his tongue seem to be paralyzed, though they give him no pain. His back and legs grow stronger every day. The ankles give him no trouble at all. He can walk better than he could since August, 1904, though he can not walk very far without his back hurting. He is now able and has been for two months, to go through exercises known in the United States Army as "setting up" exercises, and they have loosened up his muscles considerably. His appetite has been good since he was first affected, and he eats heartily since he came under observation.

He walks two or three miles a day. When he talks, his sentences are punctuated by nods of the head, demonstrating that a great deal of the spasm in the neck has disappeared. He can also turn his head from side to side. The contrast in his appearance is exceedingly striking. His expression is calm. His skin is clear. This patient was put on fermented milk from June, 1906, until September. There was a gradual progressive improvement

in his condition up to the present time. Since September he has been on a diet of fermented milk, breadstuffs and fresh vegetables. At this time he is still improving. It is interesting to note that the adenitis disappeared in one week after the beginning of the fermented milk diet and has never returned.

CASE NO. 4.

The patient came in with the carpo-metacarpo joint of the left thumb swollen, very tender and painful. Several years ago he had spent two weeks and a half at Hot Springs for rheumatism. This patient was kept on fermented milk for one month with the entire relief of symptoms, and a striking improvement in his general condition. On a diet in which meat is excluded except about once every two or three days, when he partakes sparingly of it, and also with the use of laxatives, this patient is now in splendid health.

Stools—Schmidt and Strasberger diet; reaction alkaline; odor foul; starchy indigestion; fats digested normally; fermentation test positive; numbers of muscle fibres seen with sarcolemma intact.

Urine—Sp. gr. 1010, 1013, acid; albumin and sugar negative; phosphates 3.6 g.; chlorides 9.48 g.; sulphates 2.5 g.; purin bases and uric acid .48; indican markedly increased.

CASE NO. 5.

Was perfectly well up to July, 1904. Trouble came on with pain in the outer side of the calf of the leg. Always been constipated. No history of mucus. He walked around, but the more he walked the more was the pain, the pain being confined below the knee. In November was so disabled that part of the time he had to go to

bed. In December and January, 1904, and 1905, he was confined to his bed for five weeks with pain in the calf of the leg and hip. About March he was able to get up again. Could get around then only fairly well on account of the pain in his leg. Since that time he has been up and down, never able to walk much without a cane. Pain confined to the leg and hip; a little pain in the lower part of the back and side. No trouble now with constipation. This fall he had symptoms of indigestion. About October was better. Has been worse now for about two or three weeks. Vomited a number of times, also spit up his food occasionally. Very sour. This came on just after eating and was associated with some pain.

Normal weight from 200 to 205 pounds. Present weight 165 pounds. During the last six months has lost most of his weight. Thinks he is gaining a little of his weight now.

Examination—Walks with slight scoliotic gait; not without pain in sitting or recumbent posture. Can not sleep from pain. Has to take opiates.

External surface of leg painful, "lower third often enlarged"; external surface of foot painful. Sciatic nerve tender. Enlargement around left sacro-iliac synchrois. Skiagraph shows osteophyte on margin of sacro-sciatic notch at the site of exit of the great sciatic nerve.

Stomach Contents—Total acidity, 72; free hydrochlorides, 52.

Stools—Alkaline and foul.

Urine—Acid; sp. gr. 1025; albumin, trace; sugar, negative; medium amount of hyaline and granular casts. Indican ranging from minimum amount to an enormous amount.

Operation March 29th. Osteophyte chiseled from sacro-sciatic and was then put on a diet of fermented milk.

April 10th. During convalescence in bed he was comfortable, sleeping well without opiates. At present has no pain when sitting and lying down, but has pain, though very much diminished, when walking.

Has gained eight pounds.

Is on a diet of fermented milk, breadstuffs and fresh vegetables.

It is probably well to here consider conditions favoring the decomposition of proteids and of the chemical compounds formed by such decomposition. The digestive tube of man may be likened to an incubator containing culture media upon which bacteria may flourish and the various fermentative and putrefactive changes take place. The temperature is maintained constantly at about 37 degrees, a large portion of proteid material has been changed into peptone; the facility with which bacteria flourishes upon this substance being well known. There is always moisture and the absence of light, and in fact every condition which is conducive to bacteria.

The human digestive tract always contains micro-organisms in large numbers. Among the bacteria found may be mentioned the B. coli, B. bifidus, B. aerophilus, B. aerogenes capsultus, B. lactis erythiogenes, B. putrificus, B. subtilis and the B. proteus vulgaris.

In the most excellent article by Dr. Herter, published in the *Journal of the American Medical Association,* are mentioned three types of chronic excessive intestinal putrefaction: (1) The indolic type, occurring in the small, as well as the large intestine. In this type notable quantities of indol are produced, and the stool is usually alkaline. The B. coli probably plays the most important role in this type. (2) The sacchro-butyric type, occurring in the lower ileum and large intestine, and produced for the most part by the anaerobic bacteria. In this type the

indol is slightly if any in excess and the stool may be acid. (3) The combined indolic and sacchro-butyric types. According to this author the biologic characters of the micro-organisms inhabiting the intestinal tract are not the same at all ages, and in this may be found a cause for the different types of decomposition in the intestinal tract.

The number is, however, influenced by several things, especially by the increase or decrease in the amount of albuminous food taken. A diminution in the amount of proteid material taken markedly decreases the number of bacteria, while, on the other hand, the increase of albuminous food increases greatly the number of organisms in the intestinal tract, and since it is the albuminous foods which putrefy, the indications manifestly are a priori to either decrease this class of food in amount or to introduce it into such form as to preclude putrefaction.

CHEMISTRY OF PUTREFACTION.

The putrefaction of albuminous material usually begins by changing the proteids to the albumoses, that is, bodies which are soluble either in acid or alkaline solutions, but which are precipitated by neutralization. The second step is the change of the albumoses in the peptones, which bodies are soluble in all aqueous liquids, be they acid, alkaline or neutral. This is further, by bacteriological action, changed into two principal classes of chemical compounds. First, ptomaines, and secondly the acids, acetic, butyric, valeric and sulphuric ammonia and the ammonia compounds—leucin, leuceine, tyrosin, indol, skatol, cresol and phenol, and the hydrocarbons. The fact that the putrefying material is toxic has been shown unquestionably by many observers; the symptoms depending, as a rule, on the quantity of material used. Whether the change in this so-called rheumatic condition

was due strictly to the products of putrefaction or whether the condition occurred secondarily as a result of the effect which this putrefaction produces upon the general body metabolism can not be definitely known. We do know positively, however, as before stated, that we have a constant absorption of toxic materials in varying amounts and extending over a long period of time, and that such absorption produces organic changes in the human economy.

From our investigation we can not say that proteid decomposition always manifests itself as a form of so-called rheumatism, we having found the condition coexistent with chronic interstitial nephritis and other maladies with the manifestation of no joint trouble whatever, but the fact that in the number of cases above cited suffering from so-called rheumatoid arthritis, albuminous putrefaction in the intestines existed, and from the remarkable improvement which followed the correction of this process, it seems reasonable to say that a casual relationship exists.

In the excised tissue from the knee joint no organism of any kind could be demonstrated.

An examination of the feces by the methods of Schmidt and Strasberger show these stools to be usually alkaline, varying in intensity, and to emit an exceedingly foul odor. In a number of these patients suffering at the same time with faulty stomach digestion, particles of fibrous tissue and the sarcolemma surrounding the muscle fibres were demonstrated. In others there existed coincidentally starchy indigestion. In no instance did we find any evidence of a faulty fatty digestion nor serious impairment of the biliary function. In a large number of these cases mucus occurs at the time or in the history, and either microscopically or macroscopically, and in three cases there was observed typical mucus casts of the bowel.

The urine of these patients was of low specific gravity and rarely decreased in amount. The output of total solids was practically normal, except in cases with nephritic involvement. The amount of indican varied from very slight amounts to excessively large amounts. The indican being produced principally by the action of the colon bacillus on proteid material was greatest when this bacillus played a most important role in the production of the putrefaction. On the other hand, when the aerobic organisms contributed greatest in this process the amount of indican was nothing like so great. This is perfectly explained, because the aerobic bacteria in the intestines are not indican producers. This increase in indican usually means also an increase in the aromatic sulphates.

The fermented milk upon which these patients were put was produced by the action of the B. lacticus and brewer's yeast on cow's milk. Milk fermented in this way is doubly beneficial to patients suffering from this malady. In the first place, notable quantities of lactic acid is produced; this increase in acidity greatly inhibiting putrefaction processes. Secondly, the casein is broken up into small particles and a portion of it converted into lactalbumin, hemialbumose and peptone, facilitating to a marked degree its digestion and assimilation.

SUMMARY OF CASES.

The number of cases is limited to five, for the reason that the article would be too voluminous if others were included. Although the details of the involvement of the joints in the other cases we have studied, and which we have not included in this article, varied somewhat, the general physical condition, the symptoms and the pathological findings were sufficiently like the cases reported for them to be included in this classification.

The histories above related demonstrates that each case may be classified under the broad term "arthritis deformans." In all the various cases bone hypertrophy, bone atrophy, inflammation of the soft tissues of the joints, periarticular and peritendonous thickening were present.

In one case a general adenitis existed.

Where there were deformities of the joints of the hands, hyperextension and flexion deformities were present along with Heberden's nodes, spindle-shaped swellings of the joints and interosseous atrophy.

It seems to us impossible to separate the cases into hypertrophic and atrophic varieties, except in individuals, who have the process confined to one locality, whatever may be the unknown reason of such confinement. The temperature, where there was temperature, was strikingly alike in the range from the normal to 99, 99½, 100 degrees, rarely going higher.

It seems to us impossible in the early beginnings of the disease, both from the histories investigated and from the findings of cases which have come under observation, to draw any sharp line of demarkation between "chronic rheumatism," "rheumatoid arthritis," "osteo-arthritis," and the beginning of an "arthritis deformans."

It is plain that the term "arthritis deformans," or "metabolic arthritis," may be accurately applied to include all the phases of what seems to be the same condition presenting varying manifestations in different joints of the same individual, and in the same joints of different individuals.

The constant finding of evidences of albuminous putrefaction in the intestine in connection with the cases investigated, leads us to believe that the "metabolic form" of arthritis is directly traceable to this albuminous putrefaction.

The uniform improvement of the symptoms, however varied they may have been, the unvarying disappearance most usually of all the soft tissue thickening around the joints when these patients have been put on a fermented milk diet, demonstrates beyond the shadow of a doubt that fermented milk diet is par excellence the food for these patients. It was taken without anything else by case No. 1 for over one year. Patients tire quickly on any one form of diet, yet they all bear it well for a month to six weeks, and by allowing them a little change then, it is then easy to go back to the fermented milk.

The stools and the urine on a fermented milk diet may still show evidence of albuminous putrefaction, still the toxic effects lessen or disappear.

There one must acknowledge that one comes against a great wall of ignorance: A lack of knowledge of the toxins produced by the putrefactive bacteria in the intestine on different foods, yet this much must be true, that the putrefaction changes produced by the intestinal bacteria on fermented milk do not elaborate the toxins formed by the putrefactive decomposition of meat.

This is certainly true clinically, as is evidenced by not only the improvement in the general condition of the patient and of the joint inflammation, but by the fact that the daily slight rise of temperature disappears in a short while after these patients are put on fermented milk.

The adenitis which was general, and which had existed for some time, disappeared in a few days after the patient had been put on a diet of fermented milk. Likewise the pigmentation of the skin soon disappears, as well as the toxic facial expression. Then, too, they all begin to gain weight at once. So far no measures have been carried out with the object of increasing the tonicity of the stomach and intestinal musculature. This must, however, in the future constitute an important role in the treatment.

Great stress must be laid on a certain amount of daily outdoor exercise as quickly as possible. There is undoubtedly a profound change in the metabolism of the tissues of the entire body, and where exercise can not be taken, massage is of great importance.

These patients must sleep with a great deal of air.

The function of the skin must be established and the skin utilized as an emunctory by the use of baths and hot air.

In a very large proportion of cases in which serious joint changes have taken place, relief is impossible without an appropriate combination of surgical operation, treatment with apparatus and the general medical and dietetic measures outlined above.

DISCUSSION OF JOINT PAPER OF DRS. ANDREWS AND HOKE.

Dr. C. C. Harrold, of Macon: This is certainly a very interesting and admirable paper, and the authors deserve great credit for presenting it to the Association. I wish to say, however, that I have seen Dr. McRae obtain good results without using fermented milk. He uses castor oil for cleaning out the intestinal tract, and resorts to a building-up diet rather than cutting it down; also using massage, and active and passive motion early. Of course, we were taught to give these joints absolute rest. That is the treatment that has been used by New York men; but McRae uses entirely the opposite treatment, cleans out the bowels with castor oil, and increases the diet of the patient.

Dr. W. B. Armstrong, of Atlanta: I am somewhat familiar with the work that Drs. Andrews and Hoke have been doing along this line. I remember very well when a short paper was read before the Atlanta Pathological Society by Dr. Andrews on this subject, and since

that time many of us have been trying to work on this line to see what we could find in cases showing joint symptoms, and in cases in which there were large quantities of indican found in the urine. I have had a number of cases which have shown joint symptoms. They not only have had painful joints, but painful, stiff spines, and these patients have generally been of a very nervous type. In all of them I have found a large quantity of indican in the urine. Drs. Andrews and Hoke say that this is not essential, but in my cases I have always found it. I immediately put these patients on fermented milk, and in a short time the indican disappeared from the urine. All symptoms of pain disappeared, and their nervous condition was greatly improved. I think the work that Drs. Hoke and Andrews have done along this line is remarkable. I believe it is going to revolutionize the treatment of chronic rheumatoid arthritis, and furthermore, that it is going to allow us to treat our hysterical, nervous conditions, which, I think, very often are largely due to intoxication from indigestion.

Dr. Michael Hoke, of Atlanta: I want to say a word or two regarding this subject before Dr. Andrews closes the discussion. This work is in direct opposition to that previously done in cases of arthritis deformans, which is not a disease of itself, but simply the result of something else. A man may get it from gonorrhea, from pus pockets in the prostate, and from pus pockets elsewhere. It is always a toxemia, in my judgment, from some source. The proof of the pudding is in the eating. We have had a number of cases clear up remarkably on fermented milk. We have one thing at our command all the time. Let the doctor feed his patients on buttermilk, and immediately he gets results. Take meats absolutely away from them and albuminous food,

put them on fermented milk or buttermilk, and you will see swellings diminish in size and pain disappear. There is no doubt about the results of this treatment. Because somebody at the Hopkins or New York physicians do and say directly the opposite, there is no reason why we should follow them. I feel confident from this line of work that we can not get such results as we have been getting with other treatment. Arthritis deformans in the beginning is a curable disease, just as anything else is curable. We have been driven to this study on account of a number of deformed cases that have come to us, which have been put on high feeding, and most of them have gone the rounds of Hot Springs and elsewhere, without getting relief, and winding up by coming to us with deformed legs, deformed hands, crooked spines, etc. We thought we would bring this matter before the general practitioners of this Association, and suggest the line of treatment that has been outlined, so that they may go home and try it.

Dr. St. Joseph B. Graham, of Savannah: I agree with Dr. Hoke in what he has said entirely. The practitioners of Carlsbad, Bohemia, who have probably seen more cases of arthritis deformans in summer time than all of us practitioners put together see in a year, because they go there from all over the world, agree that these conditions are due to a faulty metabolism, whatever that may mean. It has multifarious meanings; but we might say that a person gets into the habit of eating three meals a day, whether he wants them or not. We do not need three meals when we eat them. We have got too much in there to be churned up. In other words, there is too much carbon, too much nitrogen, and too much other things, and it is lost in the liver or tissues, and taken up and deposited in the joints or some other places, and

perhaps it is well to use calomel and buttermilk along with this treatment. In Carlsbad they use adrenalin solution or suprarenal gland solution, which they think solves the problem.

Dr. Andrews (closing the discussion): I owe the members an apology for reading such a long paper. I endeavored to cut it down, but found that I was unable to do so and present the subject to you intelligently.

I have nothing further to say except to refer to what has been said with regard to high feeding, massage and castor oil. These patients have arrested digestion; their intestines are atonic, weak, and functionate poorly, and it does not seem to be rational to feed a man well when he can not take care of anything scarcely, for even a limited diet he digests poorly.

In regard to purgatives, that is all right. If you clean out the intestinal tract and get rid of the detritus, it will inhibit at least putrefaction in the intestines.

Massage on an inflamed joint is just as injurious as anything that could be done, in my judgment. I can see absolutely no reason for it, nor can I see how any good can accrue from such procedure. An inflamed joint wants to be put at rest. As soon as massage and exercise can be taken, they are good things; but when a joint is acutely inflamed, the indication is physiological rest.

BLOOD PRESSURE IN HEALTH AND DISEASE.

BY RALSTON LATTIMORE, M.D., SAVANNAH.

The first man to perfect a sphygmomanometer for clinical use was Prof. V. Bosch, of Vienna, in 1876.

The inaccuracy of palpating the pulse can readily be appreciated. It is about as inaccurate as trying to judge the presence of height of fever by touch and without a clinical thermometer. The spygmomanometers of most recent construction and the ones most frequently used are the Riva Rocci, Stanton's blood pressure indicator and Janeway's sphygmomanometer. The former is made in Italy and can only be obtained in the United States by importation. The Stanton and Janeway's instruments are popular and accurate enough for practical purposes. Personally I have used the Stanton indicator and have found it most satisfactory. The blood pressure in health fluctuates more than the temperature under normal condition, but has distinct upper and lower limits. To establish a working basis I believe with the use of 8 C. C. cuff with systolic pressure in healthy male to be 150 M.M., as the upper limit. In females allow about 10 M.M. The diastolic pressure about 25 to 40 M.M. less. The above holds good during mental and physical rest. Excitement of any kind, especially mental, increases blood pressure. Tobacco has a marked effect, due to stimulation of both central and peripheral vaso-constrictor centers. Alcohol, contrary to the usual belief, does not stimulate blood pressure; in fact, the pressure falls from a weakening of the vaso-constrictor centers. Healthy adults will show a pressure with the 8 C. C.

cuff 105 to 140 systolic pressure. After middle life 140 to 150; in children, 95 to 115. I regard with suspicion any pressure in a young person above 150 M.M.; after middle life, 175 M.M. Pathological changes effect systolic pressure more than diastolic. So much for the normal pressure; now we advance to the pathological expression of blood pressure. The readings in high pressure cases frequently range from 210 to 230 and sometimes higher, occasionally as high as 260 to 310. Hensen states the lowest systolic blood pressure at which a continuation of the circulation is possible at 75 M.M., cuff 5 C.C. The lowest diastolic pressure is hard to determine. Bright, in 1836, first noticed the combination of an hypertrophied left ventricle and kidney trouble with clinical symptoms which bear his name. Of Bright's original cases a large number died of apoplexy, and cerebral hemorrhage as a termination has been well established; though one must not consider the height of blood pressure an index of the probability of an apoplectic seizure except in a general way. Chronic interstitial nephritis, the contracted kidney of the Germans and the small granular kidney of the English writers is essentially a disease of the kidney, heart and arteries combined. High pressure is a constant feature and is usually higher than in any other disease. A systolic pressure of 220 to 250 M.M. is not uncommon. In this class the usefulness of the phygmomanometer is very marked, for in these cases, as we remember, the changes in urine are very inconstant. Albumin and casts are frequently absent and at times the quantity and specific gravity of the urine are normal. With the repeated systolic pressure of over 200 M.M. the diagnosis is almost sure. To predicate from the height of the blood pressure the expectancy of life is impossible. A gradual increase in blood pressure that resists treatment is a bad sign. In

nervous diseases of the heart Janeway says: "I have never seen a case of paroxysmal tachycardia but with a normal or subnormal pressure between the attacks and during attacks observations have been made but have not shown hypotension." The diagnosis of true and angina pectoris at times baffles us. Here the blood pressure indicator is of great service. A feeling of distress or pressure about the sternum, which is brought on especially after exertion with the constant pressure of about 210 M.M., irrespective of other troubles, is due to organic disease, although otherwise we may be unable to work out our definite physical signs. Where the pain is atypical and there is a reasonable question about it being gastric or reflex, and where exercise can be indulged in without distress, and the blood pressure is normal, the probability is that the symptoms are not associated with cardio-vascular disease and the outlook is good. Low blood pressure or hypotension almost invariably accompany typhoid fever and increases with the development of the toxemia. A slow progressive fall indicates increasing weakness of the vasomotor centers and impending collapse. It calls for stimulant medication. With hemorrhage we have a distinct fall in blood pressure, while in perforation with an accompanying peritonitis as in perintonitis from other causes, we have a well marked hypotension. Here the blood pressure indicator is of special value in making a differential diagnosis. Necessarily one must have the record of the previous blood pressure. The cold baths have a distinct effect on blood pressure as they do on temperature and pulse; when they act favorably there is a considerable rise of blood pressure. Cook and Briggs have found strychnine and digitaline to be most powerful drugs for combating cardio-vascular collapse. They give as much as a tenth of a grain if the case be urgent; digitaline acts more

quickly. Caffeine and camphor also cause considerable rise. Alcohol, contrary to the usual accepted opinion, in animals and normal men is without influence on blood pressure and the force of the heart, but it certainly acts as a food and has a good effect on the blood distribution, but it must not be relied on singly to fight cardiac and vasomotor collapse.

In pneumonia there is no constant effect on blood pressure as in typhoid fever. Gilbert found, in favorable cases, the tension never increased materially, while in fatal cases a rapid fall to 80 or less occurred. A rising pressure with a fall of pulse indicates a favorable termination. The stimulant measure holds good as in typhoid fever. In diphtheria, compartively few clinical studies of blood pressure have been made. In Freidman's series of fifteen cases, a marked hypotension came on during the first week, only two cases recovered. Hypotension is of great importance in tuberculosis, appearing even in the incipient stage. Syphilis in the early stage is marked by hypotension. Cachectic conditions, which are due to impaired nutrition, are in a majority of cases associated with hypotension. The treatment of cardio vascular diseases has for its main object the improvement of the capillary circulation, so that it may be adequate to the demands of the tissue. The heart may be equal to the demand during rest, but not forced exertion. Therefore the essential part of treatment is a complete regulation of the patient's life. Diet, baths, and massage help. Profuse sweating will reduce blood pressure. Nitroglycerine, sodium nitrate and spirits ætheris M nitrosi produce a fall in blood, the latter very slowly. Iodide of pot. as a vasodilator is the subject of much dispute. It certainly has no immediate effect, but often relieves chronic symptoms. I am very much indebted to Dr. Theodore Janeway, of New York, for much of the above

information, and trust that this imperfect paper will stimulate other members of this Association to work along this line, for I regard it an important subject and one that will lead to valuable results.

DISCUSSION ON THE PAPER OF DR. LATTIMORE.

Dr. St. Joseph B. Graham, of Savannah: The original Bright's disease, so-called, was not an affection primarily of the kidneys, but one of arteriosclerosis, and Bright's disease may be considered as a general disease of the system.

With regard to the sphygmomanometer, the instrument that has been exhibited by Dr. Lattimore is defective in that it should have a vacuum in the top of it.

THE SODA FOUNTAIN AND ITS ATTENDANT EVILS.

BY J. A. COMBS, M.D., LOCUST GROVE.

I have read with increasing interest and pleasure the articles which have appeared from time to time in the *Journal of the American Medical Association* exposing the flagrant frauds of the nostrum evil, which has attained to such great proportion in our country.

It is also encouraging to notice that some of our best lay journals and magazines and some of the better class of daily papers are directing some attention to the subject and in a few instances have thrust some keen and telling darts at this hydra-headed monster of deception.

At first glance it is almost impossible to conceive how these frauds, so numerous and so harmful, can be so successfully launched and perpetrated on so many intelligent people. When we remember the many alluring guises it assumes, the wonder is not so great that it is able to prey alike upon the ignorant and the learned, the credulous and the skeptic, the pauper and the millionaire, the "bum" in the street and the lady in satin, the sinner in the pew and the pastor in the pulpit. It is a lamentable fact that this nefarious evil is kept going even through our own profession. It is well known that ignorant, lazy, and unscrupulous holders of medical diplomas, though in some cases men who know better and are actively engaged in a decent and paying practice, use and endorse these secret nostrums. Should we, then, marvel that an unsuspecting public, who have a right to consider the physician as the guardian of the public health, should

really believe that the patent preparation is all right, and is a panacea for every ill? The greatest encouragement to this evil has probably been through the ignorance and avarice of our own profession. But many hopeful signs are now making their appearance. Up-to-date medical men are beginning to realize more and more that their position in the matter is closely watched and no self-respecting physician can afford to prescribe or in any way endorse these nostrums. Another hopeful sign I note with no small degree of interest is that the general public is being put on notice in various ways as to the bad effects of these preparations.

Some of our State legislatures are considering legislation directed against the manufacture and sale of these fraudulent concoctions. In many other ways this subject is being brought before the reading and thinking public.

But with all our efforts thus far against this evil there is still a need of a closer organization of our forces and a better general understanding among us of our methods of advance.

In addition to the lack of close organization and definite understanding among the forces which are endeavoring to rid the country of this vulgar product of quackery, in my opinion there is a very important phase of the subject being neglected, viz.: the patent or secret drinks sold at the soda-water fountain.

This brings us directly to the subject under discussion.

It is commonly and justly conceded that the medical profession is the guardian of the public health, so it becomes our sacred trust and binding duty to warn and advise the public in every way possible against this nostrum curse, including the various patent, or secret drinks usually dispensed at the soda-water fountain.

Most of these drinks contain some drug which effects the nervous system to a more or less marked degree, and

we are all aware that no one can take a nervine for any great length of time without injury to the nervous system. Moreover, it is the opinion of some of our profession that these patent drinks have opened a new and prolific source for the development of the various forms of nervous affections.

These nervines, compounded as they are, and taken in an ice-cold medium into a stomach filled with food which it is trying to digest, is, in my opinion, a potent factor in the production of some of the forms of digestive disturbances which are always annoying to the patient and sometimes baffling to the doctor.

One eminent author says that a very fruitful source of these digestive disorders is due to the habit of taking too much ice-cold substance into the stomach during and immediately after our meals, and especially is this true if these substances contain excessive amount of sugar and the harmful ingredients usually dispensed at the soda-fountain. In discussing the subject of chronic gastritis in his text-book on the practice of medicine, Dr. Osler makes use of the following words: "One of the most powerful enemies of the American stomach in the present day is the soda-water fountain, which has usurped so important a place in the apothecary shop." This statement coming from an authority of Dr. Osler's standing should cause us to think seriously about this colossal evil which has sprung among us with such marked avidity, and continues to "flourish like a green bay tree."

Another thing which may be justly urged against the soda-fountain is its filthiness. This feature may be observed in its fullest bloom in the smaller towns where there is no water-works, and in the lowly streets of the cities.

In small towns without water-works the boy who attends the noisy squirter of polluted carbonated water will

frequently use the same water for cleaning (?) the glasses until it is as thick as frog-spawn with filth and flies. We must not forget that these disease-conveying creatures are always in full attendance upon these shrines that have been erected to gratify the whims of an artificially produced appetite of the American spendthrift. Dr. J. C. Wilson, Professor of Medicine at the Jefferson Medical College, says that he has noticed that "The soda-fountain is attractive to girls at the giggling age, to lads that are 'fly,' and to flies themselves."

Owing to their filthiness the poorer class of soda-fountains may be, and are, probably the means of conveying disease from one person to another.

Another serious objection which may be urged against the soda-fountain is the fine opportunity it affords for the illicit sale of whisky and other narcotics. This phase is called to our attention not only by the faithful officers of the law, but also by the suspicious crowd that "hangs around."

One of the surest and most dreaded results from the soda-fountain narcotics is the creation of an appetite which will take stronger and more harmful drinks to satisfy. In my opinion many a boy has begun at the soda-fountain a habit of drinking and treating which has taken him through the beer garden, and the barroom, the low dives, the opium joint, the gambling den, the house of ill repute, and finally to disgrace and ruin.

Not only does the soda-fountain offer a menace to our sons, but also to our daughters. Narcotics have the same effects upon our daughters as upon our sons, the only difference being is the fact that with our daughters the opportunities for satisfying and cultivating the appetites are not so numerous and so dangerous. But through the influence of the soda-fountain the number of dangerous opportunities for our girls is fast increasing.

We are living in an age of fad and fancy. It occurs to me that we are fast departing from the "strict proprieties" of our safe and cautious old-time fathers and mothers, and have become extremely "liberal" in our views of social life and customs.

The custom of our daughters mingling with all classes of people and drinking at these public places of dope and filth is a long step towards practices that are worse.

With the increase of foreign immigration there will surely come an increase in the wine parlors, and the beer gardens. It may be expected that the daughters of America reared in the atmosphere of "liberality" of thought and "freedom" of deed and trained to endorse these places of dope will themselves begin to practice the vilest habits of dissipation.

The last objection which I shall urge against the soda-fountain is an act, the occurrence of which is the least frequent and least probable of all, yet it is the most heinous in its character. It is the opportunity given to unscrupulous young men for doping our daughters for the purpose of taking criminal advantage of them. Of course, this would have to be worked very smoothly, but we should remember that "smooth" individuals are increasing rapidly.

In studying the subject we find that the soda-fountain has nothing for which to commend itself, either to the profession or the public, but the following serious objections may be justly urged against it:

1. It fosters the nostrum evil.

2. It is a fruitful source of nervous and digestive disturbances.

3. By its filthiness it may be, and probably is, the means of spreading infectious diseases.

4. It offers opportunity for the illicit sale of whiskies and other narcotics.

5. The powerful drug dispensed in the patent or secret drinks create a thirst which leads to crime and disgrace.

6. It affords opportunity for undesirable commingling of the sexes.

7. It paves the way for the wine and beer garden, and at last for the saloon.

PHOTOTHERAPHY A POTENT THERAPEUTIC AGENT IN THE TREATMENT OF CERTAIN MENTAL AND NERVOUS DISEASES.

BY J. CHESTON KING, M.D., ATLANTA.

Phototherapy has its mysterious influence on vegetable and animal life; there is no subject in science which, in its discovery, more immediately claims for itself a higher place from merit alone than this branch of science. Sunlight so common to us all, and yet by far more necessary to each individual, creature and plant in God's creation, is yet, by virtue of its daily appearance, unappreciated, and its powers unrecognized and overlooked. In the composite light of the sun, as you know it, we have brought to us in one beaming whole life's essential of existence.

The sunlight, as we see it through man's ingenuity, has been divided into its component parts, by means of that wonderful instrument, the spectroscope. In this division so made manifest, we are brought face to face with the sublimity of creation and the immeasurable, and to the finite mind of man unappreciable powers of the infinite. These rays of light so essential and so beautiful, and in whose rays we bask each day, contain an essential and in every way the necessary element of cell-nutrition, that which gives the vigor and strength of life, which paints the wondrous hues of every flower in color, bedecks the birds in colors so wondrous that we have what is called the "Bird of Paradise."

In the sunlight, as it warms the earth, there exists for the good of all things certain elements which are recog-

nized to be rays of light known as chemical, heat-producing and light-giving. Briefly this sums man's knowledge as to its component parts. Light in its power of painting all things various hues is best illustrated possibly at the face of the earth before us. Where these wondrous rays run riot at the equator a fusion of color bursts upon the sense of man almost startling in its beauty. In the arctic night we find all things subdued and white, the seal and the fox alike change their coat with the six months' lapse of the sun's appearance. These signposts in nature's grand field of observation should draw each one and demand of him to stop and think, and realize that of which this paper is but a slight suggestion, that almost any step that to man becomes an essential to his growth, well-being and good health, can be wrested from nature by an increase or decrease as long as experiments of Finsen and others have proven to be true. By learning its secret, we can quiet the restless, nervous system, rapidly increase cell nutrition and thereby producing unlooked-for wonders and growth, irritate the nervous system, when too dormant from disease. In other words, we possess in this science, yet infantile in its existence, that promise made to us by our Creator, "That in his own image created He them."

The effect of the Cooper-Hewitt electric light bath is wonderful in cell nutrition. It is the most effective of all means of producing general and local effects, by dilating the cutaneous vessels. The reddening of the skin begins within a very few moments after the influence of the light is brought to bear. The effect of such an application is to fix the blood in the skin by converting the passive venous congestion into an active arterial hyperemia, in which the peripheral heart is brought into active play.

The nervous system is stimulated through impressions upon the skin and the nervous sensibility is lessened to a

marked extent. This is accomplished by the absorption of moisture in the terminal nerve filaments of the skin.

In my practice of mental and nervous diseases, I have become especially interested in electro-photography as a potent therapeutic agent in certain lines of nervous disorders. I inaugurated in Howell Park Sanitarium the Cooper-Hewitt cabinet baths.

The indications for its use are:

1. In that class of cases where I wished to produce a general dilatation of the cutaneous vessels and to convert venous congestion into active arterial hyperemia.

2. To increase the oxidizing power of the blood and thus bring about tissue metabolism. It is well known that light exercises a decided influence in throwing off the oxygen in the hemoglobin, not so with darkness.

3. It facilitates assimilation and metabolism, thus indicated in all cases of cerebral anemia.

4. In those cases where there is a high nervous or mental tension, it has no equal as a sudorific measure, and thereby acts as an analgesic, but not as an anodine deadening pain.

5. For tonic effect, we have at our command no other means that excels a twenty-minutes application each day. A sensation of warmth being similar to that experienced by one who stands before a glowing fire is most pronounced, and when followed by proper hydratic application the stimulation and nutrition is of the highest possible degree.

Phototheraphy is in a field peculiarly its own, in which it is unique. It stands closely to nature's great restorer in balancing the circulation and thereby establishing the primary condition essential to aid the recuperative powers of the body in their effort to re-establish a practically normal condition of the blood, which blood gives that nutrition to each organ so essential to life.

These statements are not made at random, but after ample experience in my sanitarium which I shall later tabulate. Phototeraphy is not hostile to any other mode of cure.

We, as a body of scientists, seeking day by day for a panacea for different human ailments, realize that all the agents at our command are yet inadequate to supply the demand for relief from pain and disease. All the forces of medicine need more help and not less. Therefore, I commend this new therapeutic agent to your consideration and study.

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Phototheraphy is in a field peculiarly its own, in which it is unique. It stands closely to nature's great restorer in balancing the circulation and thereby establishing the primary condition essential to aid the recuperative powers of the body in their effort to re-establish a practically normal condition of the blood, which blood gives that nutrition to each organ so essential to life.

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We, as a body of scientists, seeking day by day for a panacea for different human ailments, realize that all the agents at our command are yet inadequate to supply the demand for relief from pain and disease. All the forces of medicine need more help and not less. Therefore, I commend this new therapeutic agent to your consideration and study.

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THE MEDICAL PROFESSION AND THE GREAT SOCIAL EVIL.

BY ARCHIBALD SMITH, M.D., ATLANTA.

To convince the medical profession that a great social evil does exist, and that it is of appalling magnitude, should take but little argument, for their daily duties bring them in contact with many conditions resulting from it, which ruin the health and blight the lives of thousands in all classes of society. But this very familiarity has led them, in a large extent, to regard these conditions as normal or unavoidable.

That this is a most ancient evil, no one will deny, and none can hope for its complete removal before the millennium, but if an evil must be with us, let us reduce it to a minimum.

For this difficult but noble work the medical profession is peculiarly fitted, owing to their knowledge in these matters, and the relation of confidant and adviser to the people. Besides, what has been done with smallpox, diphtheria, tuberculosis, malaria, yellow fever, etc., shows that it is not characteristic of the medical profession to stand back for difficulty or danger when duty calls.

Now when so much has been done in other lines, why should so vital a matter as this be so grossly neglected, unless it is simply because the devil, in his satanic wisdom, has thrown a cloak of shame and false modesty over the whole matter to keep out the light of knowledge and truth. But why should we let so flimsy a sentiment as false modesty form a hiding-place for so terrible a condition, the very ubiquitousness of which has made people

indifferent to its presence. This, however, is characteristic of the human race, for a small focus of some unusual epidemic, such as plague or yellow fever will cause much more stir among the people than do tuberculosis and venereal diseases which, though largely preventable, slay their thousands annually. But the great white plague is beginning to receive its merited attention, and why not accord the great black plague, which is its rival, an equal amount of attention?

CAUSES OF THE EVIL.

If I were asked to name the greatest cause of sexual vices, I would unhesitatingly say IGNORANCE, and spell it with capital letters. By this I mean a woful lack of knowledge among the people, especially the young, of the fundamental principles of sexual physiology, pathology and hygiene, and the consequences resulting from the disregard of these laws.

King Solomon seems to have had a similar opinion, and he was a man of wisdom as well as experience in such matters. In his proverbs he gives seven distinct admonitions to young men on this matter, and in nearly every one makes use of an expression to indicate that the young man who went astray was "void of understanding" or "among the simple ones."

Under the head of ignorance might also be classed misinformation, among the front ranks of which belong the sexual-necessity lie and the wild-oats lie, its next of kin. Both of these are very convenient theories to salve the consciences and furnish excuses for evil-doers. For, if intercourse is a necessity to men, and boys must sow their wild oats, it can not be wrong; but fortunately for those who wish to be virtuous, neither of these theories has any foundation on facts, and the only semblance it bears to

the truth lies in the fact that a person of weak will-power may allow his erotic tendencies to be developed till they reach a point beyond the control of his will.

Many authorities might be cited to prove that virtue is not only possible, but profitable. Dr. H. C. Wood, of the University of Pennsylvania, says: "I can safely say that I have never seen any serious results from continence, after twenty-five years' practice with nervous diseases as a specialty, where the alleged results are most manifest. But, on the other hand, I have seen thousands of cases where the lack of continence has been followed by the most dire results."

This alone should be sufficiently convincing, but nearly every other authority will tell you the same thing. If you wish further proofs simply look at the newspapers for the evil results.

With this state of affairs existing, is it not high time that we endeavor to stop the sowing of wild oats, and bring about a rotation of crops? "for what we sow that shall we also reap."

Now, there are many men who not only preach, but practice, these doctrines both to their own hurt and the downfall of many of both sexes. These victims are usually young, and may also be numbered "among the simple ones," to use the words of King Solomon. Seeing that these things are so, why should we as a profession stand complacently by and let the great stream of young people who pass us every day go on drifting out into the sea of life, so full of reefs, without even offering them a chart or a compass, when we know that there are so many phantoms along the shore to lure them into death. Why not also try to impress parents with the importance of giving their children proper instruction instead of neglecting this branch of their education altogether, or even telling them such lies as that babies come out of hollow

trees, for this they will soon find out is not so, and then they will not be much inclined to believe any good advice, that such parents may chance to give them in later years.

Another mistaken and highly pernicious idea is the so-called double-standard of virtue, which is a sort of outgrowth from the idea of sexual necessity, and is just as false. Every illicit intercourse on the part of a man requires the same of a woman, and why justify one and condemn the other for the same act. It would be just as logical to try to make one side of a pair of balances go up and the other down by placing the name weight on each side. It has been truly said by someone that if there is such a thing as sexual necessity among men, that the women who sacrifice health and life to supply this necessity should be held in the highest regard for their sacrifice instead of being called outcasts and considered fallen.

Another phase of the double-standard is largely responsible for the existing race question, for as long as the existing number of mulattoes testifies to the fact that the white man does not let the black man's woman alone so long will the black man have a grievance against the white, and he does not stop to consider that the white man uses persuasion, while he must use force.

Furthermore, a man can not put himself on an equality with a woman any more than by becoming the father of her children. He should also remember that these children are his own flesh and blood as much as hers; that instead of being improved negroes they are degenerated white men, and what greater curse could a man put on his sons and daughters than of both mongrelism and illegitimacy, giving them a dissolute negress for a mother, and placing them in surroundings where virtue is well-nigh impossible. Besides all this, many a pure Southern woman has her health wrecked and life ruined by syphilis or gonorrhea contracted from one of these filthy negresses by her father or husband.

If miscegenation could be done away with it would do more to solve the race problem than all the printers' ink that has been expended on the subject, or ever will be expended.

ABORTION.

Prominent among the factors making for immorality is abortion, and still more the shameless way the daily press mendaciously conveys the idea that to be relieved of a pregnancy only requires the use of some nostrum claiming to relieve all obstructions without pain, danger, or loss of time.

Besides the medical abortionist, those who use surgical means are well known, particularly among the women. These harpies of society not only destroy innocent unborn children by the thousands before they are able to raise even a feeble cry in their own defense, but have great tendency to encourage promiscuous relations between the sexes by furnishing an avenue of escape from the direct results of one wrong-doing by the commission of a still greater one. It is true that many lengthy and plausible excuses are brought in defense of such procedures, but except where one life must be sacrificed to avoid the loss of both, the murder of helpless fetus is as bad as killing a blind beggar to steal his coppers.

VENEREAL DISEASES.

The existence of venereal diseases is well known even to the laity, but their significance is not yet well known or appreciated, even by most of the medical profession, for the comparison of gonorrhea and a cold are still with us, though even the laity are beginning to learn that venereal diseases are both serious and avoidable.

That virtue is its own reward is a very true saying, and while it is not its only reward, it is the only sure preven-

tive of venereal disease. Furthermore, venereal diseases are not all of the great social evils. Let those who think this too rigid a measure for prophylaxis look for a minute at the failure of other measures, such as licensing and examination of prostitutes, antiseptic injections, and other devices to take the bait and leave the hook. Look also at the terrible ravages of venereal diseases, especially gonorrhea, so long supposed to be a mild local affection. This disease may invade almost any organ or tissue of the body, often causing impairment or loss of function, or even death when the heart of peritoneum is invaded.

High authorities say that at least eighty per cent. of the men in the cities have gonorrhea before marriage, and that with increasing travel the country will soon be as bad. Various operators estimate from 60 to 90 per cent. of all operations on the female generative organs are done for the results of gonorrhea, and a great part of the invalidism of women is due to the same cause. And last, but not least, about one-third of the blind who have to to be supported by the public lost their sight from gonorrhea.

It takes much more strength of character to remain virtuous and avoid these evils than to run into them, but the man who has so remained may reflect on the fact with just pride, especially when he remembers that he has not aided in despoiling the purity of womankind.

The suggestion to castrate syphilitic and gonorrheal men has caused a vigorous protest; but would not this be more fair than the constant castration of innocent women for the gonorrhea given by their husbands.

Alcohol is a great factor in causing immorality, for it increases and inflames the sexual passions while the moral faculties and higher sensibilities, which are the greatest safeguard to virtue, are blunted and held in abeyance by it.

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Right here wild oats might again be mentioned. Show the people some of it at the time of harvest and it wont appear so attractive as it did at the time of sowing. Let us glance at some of the pictures of the harvest, by G. Frank Lydston, in his characteristic style:

Picture 1.—A certain resort—the sinkhole into which a large part of the immorality, crime and disease of America is dumped—has hundreds of thousands of visitors annually. Of these a large proportion go there to harvest their wild oats crop. Visit one of these government "ratholes", defender of the wild oats, and tell me how you like the harvest.

Picture 2.—A hospital. Here is a group of locomotor ataxias; there a group of deformed children, yonder a girl in her teens nursing a child who is not wise, for it knoweth not, and ne'er will know, its father. More wild oats.

Picture 3.—An asylum. Here is a case of general paresis; there a melancholiac; in the next room a maniac is heard shrieking. Wild oats a-plenty.

Picture 4.—A police court full of drunks, criminals and bums. Wild oats again.

Picture 5.—A jail. Here are wild oats of the striped, short-haired variety in abundance.

Picture 6.—A foundling asylum full of children, cursed before they were born by society's cruel term "bastard." Poor little wild oats.

Picture 7.—A doctor's office full of anxious men, and still more anxious women, who do not gossip about their ailments, even among their intimates, save where the women are told by the doctor a euphonious fairy-tale for home use. Wild oats growing in the dark.

Picture 8.—A brothel. Around the reception-room sits a collection of poor devils, many of whom were originally sacrificed in aiding our youth to sow its wild oats. They are now getting poetic revenge, as the doctor knows.

Picture 9.—A beautiful girl was found dead in the river one fine morning. What was she doing there? Washing the wild oats out of her life.

Picture 10.—A pistol shot rang out in a gambling-hell —a man falls dead. The gun was loaded with wild oats.

Picture 11.—A bank cashier flees to Canada; he is looking for a market for his wild oats.

Picture 12.—A series of deserted babies are found in the snow. Who planted them there? Wild oats grow in the snow?

And to this I might add picture 13.—A young wife on an operating-table; the man who swore to love and cherish her anxiously pacing the floor outside; a surgeon is castrating her to remove the wild oats planted by her husband, hoping that he may save her life.

"We doctors know the wild oats crop under numerous terms. Crime, imbecility, inebriety, syphilis, paresis, locomotor-ataxia and gonorrhea are chief among them. What the consultation-room does not tell us the operating-table does. The woman who prefers a graduate of a wild-oats college would better look at the specimens taken from innocent wives and see how they tally with some husbands' youth."

Thus far merely persuasive methods have been suggested, but the profession should unite in agitating and advocating the passage of more stringent and efficient laws, along which line I will make a few suggestions for your consideration.

1. That all men be made to present a certificate of health before being granted a marriage license, and that these certificates shall be issued by physicians appointed

by due authority, for their integrity and ability to make thorough examinations with special reference to venereal diseases.

2. That ablation of the sexual organ shall be made the legal penalty for many crimes, especially rape. One emasculated negro will be a greater warning to the other members of his race than a thousand burned ones, and the majority of negroes would dread being a live eunuch much more than being a dead man.

3. I would commend for your serious consideration the question of abortion, with special reference to the lack of efficiency and enforcement of our laws on the subject, and to the education of the people to the fact that an abortion is more dangerous than normal labor, and that it is just as much destruction of life in the early months as it is after so-called quickening, or even after birth.

Of course we do not make or enforce the laws, but an organization of this magnitude and importance can and certainly should make itself felt in so vital a matter.

As the law now stands, in many States, neither party to the crime is afraid of being betrayed by the other, for the law has effectually sealed the mouth of both parties by prescribing a penalty for each, and the law in our own State is very defective.

The liability of the woman in such cases has but little deterrent effect on her part, for she knows that the abortionist is not any more anxious to tell about it than she is, and on the other hand it greatly increases his security and emboldens him by sealing her mouth also. If this safeguard were removed from around him, and the mails were denied him as a means of publicity, his business would certainly decrease in a marked degree, and he could much more frequently be convicted than under the laws now existing.

Women illegitimately pregnant should be encouraged

and assisted in going to term, and better facilities offered for proper disposition and good rearing of the children, many of whom might be adopted into the childless homes of respectable people if proper steps were taken to secure them positions. This would make useful citizens out of many that are now destroyed or brought up in vice. This might seem to be putting a premium on illegitimacy, but bearing of an illegitimate child, even under such circumstances as this, would be no pleasant matter, and would not be regarded with near the complacency with which an abortion is contemplated at present.

4. Another reform sadly needed is an amendment of our State laws, making the age of consent at least sixteen, as is the case in most other States. The tender age at which a girl is allowed to give away her virtue, or be cheated out of it by the wiles and flatteries of some execrable seducer, is a blot on the name of our fair State, and a reflection on the gallantry of her sons. Carnal intercourse with a girl too young for legal marriage should certainly be made a crime, punishable by either castration or some other severe punishment.

5. More laws and better laws should be provided against mixture of the races. This would do much towards saving our sons from venereal diseases and vice, and would do more towards solving the race problem than all the ranting of newspapers on both sides of the Mason and Dixon Line, and the negro colleges that have even been, or ever will be, endowed by philanthropic but misguided individuals.

Perhaps these ideas may seem utopian or impractical to many, or even objectionable to some, but it is time we were abandoning the present policy of inaction, for its results, as shown above, are certainly not encouraging, and we should begin to do things along this line. If I can discern the signs of the times correctly, they are

pointing to a greater activity. The forces of evil may be growing stronger, but the people are beginning to realize that a fight must be made for purity, and that it is largely on the doctor that its success or failure depends.

I believe I shall live to see some of these suggestions realized as facts. But whether this be so or not, if I have brought the matter before the profession forcibly enough to arouse a more active interest in it, and have succeeded in impressing more firmly upon any of them the magnitude and the terribleness of the great social evil in general, and venereal diseases in particular, I will feel that my labors have not been in vain.

Much work has been done on the use of the opsonic index in diagnosis, especially in tuberculosis, and we will consider this disease as an example of the use of the index to determine whether disease is present, and the resistance of the body to it.

The opsonic index of normal blood under the present faulty technique varies from .75 to 1.2.

In tuberculosis it varies from .2 to 2, a large number of subjects falling within normal limits. In a case of doubtful diagnosis the following conclusions have sufficient foundation on experiment to be considered of value.

1. Persistently low index would point strongly toward tuberculosis.

2. Persistently normal would exclude tuberculosis.

3. Fluctuations in index from high to low would mean active process.

4. One examination of little value.

It has been found that body fluids near site of disease have lower index toward organism causing that disease than the blood serum of patient.

Therefore if fluid in chest of patient should show low tubercular index, tuberculosis could be inferred; if low pneumococcus index, lobar pneumonia could be inferred; if ascitic fluid of unknown origin should show low tubercular index, tuberculosis could be inferred.

Use of index as guide in building up immunity by means of vaccines.

Very interesting work. If it can be perfected, presents great field of usefulness. Vaccines, that is, emulsions of dead bacteria, are injected in gradually increasing doses into patient sick with same disease, until resistance has been so built up by accustoming system to large doses of poison that it is able to take care of and throw off disease present.

When vaccine administered, first a period of lowered

trees, for this they will soon find out is not so, and then they will not be much inclined to believe any good advice, that such parents may chance to give them in later years.

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it becomes, and a worker may be over-enthusiastic in his conclusions.

That the discovery of opsonins is a valuable addition to science is an evident fact, but its uses clinically are as yet doubtful. The technique is still too faulty and the work on the application of the index in treatment and diagnosis as yet too limited for conclusions to be drawn, and if these uses are proved the skill necessary to put them in practice is too delicate for any except experienced workers in large laboratories.

In the meantime the clinician can only follow their work with interest, and wait until it is so perfected that it can be used by him to advantage.

TROPICAL APHTHA OR SPRUE IN GEORGIA.

H. F. HARRIS, M.D., ATLANTA, GA.

Tropical aphtha, or sprue, is a disease which was first described by Hillary in 1776, his observation on this affection having been made in the Antilles. Since that time the malady has been found in most of the tropical countries of the world, and even in some sub-tropical regions. As to whether the disease has been recognized in this country in the past, I am at a loss to say, as I have not had access to the literature.

My work on this subject extends back a number of years—my first case having been seen in January, 1901. No report was made of this for the reason that the patient had previously to his illness lived for a time in the West Indies, and I was not absolutely sure, therefore, that the disease had its inception in this country. This case, with another, was reported in *American Medicine* for July, 1906. Since my report on these two instances of the disease several others have been seen, and I now take this opportunity of reciting to you the principal clinical features that characterized them, and to direct your attention to the fact that this very serious affection is not uncommon in our State, and, as it is only curable when a diagnosis is made early, its recognition becomes, therefore, a matter of great importance.

The clinical histories of these cases are as follows:

CASE No. 1. L. G. M., aged 32, white, male, a native of Georgia, a dental student, was first seen on January 15, 1901. His family history is negative, except that one sister has had an exactly similar disease to the one the patient complains of; this sister has always lived in Boston, Ga.

Past History.—During childhood, the patient had whooping-cough, measles and mumps. Ten years ago he had chills and fever; he also had malaria seven years ago. He never had syphilis, but ten years ago he had a bad case of gonorrhea. He had typhoid fever ten or twelve years ago.

Habits.—He uses tobacco; both smokes and chews. Before he was sick he drank moderately.

Present History.—Present trouble was first noticed about six years ago while the patient was in his home, Boston, Ga., but previously he had spent two years in the West Indies. First symptoms noticed were that movements from the bowels were loose, but the number was not increased nor was blood or mucus observed in the stools; no pain was present at this time.

More recently the trouble has slowly progressed, there being periods during which there were many loose stools passed in twenty-four hours, while at other times the number was normal; often the movements were of natural appearance. As the trouble gradually grew worse some pain was felt in the umbilical and hypogastric region at times. He has had backache a good deal. Sometimes, perhaps once or twice a month, or once in several months, there has been blood, and occasionally mucus, in the stools.

Toward the latter stages of the disease, the patient complained of great weakness, dizziness and staggering, and shortness of breath not influenced by exertion. His feet are at times tender, but never swollen. His appetite is always good, but after eating he complains of a tight feeling in the abdomen. He gradually became greatly emaciated, and at this period was very melancholy. Toward the end his mind was greatly affected. With the progress of the malady the number of stools gradually increased.

On first examination the patient was found to be in a fairly good condition, but was later greatly emaciated. The skin was never very pale, and in the later stages of

the disease became of a muddy brownish hue. The pulse, temperature and respiration were normal at first; later the pulse was rapid, but no elevations in temperature were ever noted. His tongue is small, very red, fissured and generally without any coat at all; the filliform papillas seemed entirely absent. Later sores developed on and under the tongue—the borders being principally affected; these ulcers come and go. Ulcers also formed from time to time on the buccal mucus membrane, on the roof of the mouth and between the last molar teeth on both lower and upper jaws—the last being known in India as Crombie's molar ulcers; these ulcers usually presented a reddish appearance; more rarely they are covered by a slight whitish pellicle. Toward the later states of the malady the patient's mouth was so sore that mastication was difficult, and, doubtless as a result of sores in the pharynx and esophagus, swallowing was very painful.

The heart, lungs and spleen appeared to be normal.

There was in the beginning slight diminution in liver dullness; in the later stage of the disease the dullness extended from between the seventh and eighth ribs above down to within about 4 cm. of the costal margin in the right nipple line. No other abnormality could be made out in the abdomen. Rectal examination showed no ulcerations of the mucosa of the gut.

The urine was examined a number of times, and, excepting only that the quantity was diminished, no abnormality was found.

The feces were pale, frothy and exceedingly offensive. Reaction, acid.

No parasites or ovums were found. Neither blood nor pus were ever detected.

A short time before death there were 3,200,000 red and 10,050 white cells to the cu. mm. of blood. Hemoglobin, 65 per cent. The patient gradually grew worse and I learned that he died toward the end of the year 1904.

CASE No. 2. J. C. G., aged 54, male, white, native of South Carolina, a woodman, was first seen May 20, 1905.

Family History—Chills when a boy. Bowels had been loose from time to time for last twelve or fourteen years; when the trouble began he was living in Laurens county, Georgia. For two years he has lived in Pretoria, Ga. For a long time in the beginning he was troubled with slight morning diarrhea at irregular intervals, accompanied by flatulence and eructations. Since October, 1904, his bowels have never been natural at any time.

Habits—Since attaining manhood has indulged in occasional sprees, but in the intervals takes no alcohol in any form. Uses tobacco.

Present History—For seven months he has had diarrhea constantly, which has gradually grown worse. No griping or pain until a short time before death, when he had pain in bowels during exacerbations. Toward the end of his illness the bowels acted from fifteen to twenty times in twenty-four hours; movements came in paroxysms, possibly half a dozen in an hour, followed by periods of rest. In the later state of the disease, hiccough was common, and there were spells of nausea and vomiting. The patient was melancholy, and toward the end his mind became very feeble.

The notes that follow apply to the patient's condition during the latter months of his life.

He was frightfully emaciated. Skin was somewhat pigmented, mucous membrane pale. The face was shrunken, and he had a vacant expression.

Tongue small and very red; filiform papillas absent. At this time minute superficial erosions occurred upon its surface. No sores of buccal mucous membrane were complained of; no pain in the throat on swallowing. The tongue was practically never coated, and when so there was only the merest trace toward the back.

Respiration normal when first seen; later toward termination reduced to 8-10 per minute.

Temperature practically normal. A few times during exacerbations has gone to 101 degrees F. A short time before death it was 97.2 degrees at 2 p. m.

Red blood cells, 3,430,000; white, 11,800; hemoglobin, 75 per cent. Count of white cells resulted as follows: Polymorphonuclear leukocytes, .75; small lymphocytes, .18; large lymphocytes, .06; eosinophile, .02⅔.

Feces foamy, thin, watery and brownish in color; sometimes clots of blood were present. Odor was very offensive. Food of all kinds now passed undigested. Reaction, acid. No amebas or other parasites. No ovums. Hydrobilirubin present.

Urine normal, though quantity was diminished.

No tumor in abdomen. Tenderness was always present between the umbilicus and pubes. He complained of burning pain in this region extending to the back. In the right mammary line liver dullness begins at upper margin, seventh rib, and extends to upper margin of the ninth rib. Heart, lungs and spleen normal. No pain in throat or neck. Rectal examination negative as regards ulcerations, but considerable tenderness present.

The patient died March 2, 1906.

Case No. 3—M. B. aged twenty-two, female, white, native of Georgia; single; first seen May 12, 1906. Family history, negative. Past history: Her present trouble began at about the age of three with diarrhea, which has continued since. The stools vary from one to four in twenty-four hours; the average now being two. She suffers intensely with griping and bearing down pains during exacerbations. The stools are very copious and are generally watery in consistency, and of a whitish color; no blood was ever found. When the stools are very frequent whitish mucus is often passed. She had some small intestinal parasites during 1905—supposedly pinworms. She had occasionally had fever, the temperature sometimes going to 101 degrees F. Her tempera-

ture is usually 99 degrees, or over. She has always been much worse in summer in every way. At present she looks fairly well, but up to this winter was terribly emaciated. Suffers from slight tenderness in bowels. Great quantities of gas form in the intestines. Stomach is often distended, and she suffers from heart-burn after eating. Tongue gets sore and raw during exacerbations. Gives a history of having suffered about a year ago from some trouble in the arms, which was probably a neuritis. Her mind has not been entirely normal since this attack. She is a resident of Hart county, Ga.

In general appearance is anemic, but fairly healthy. No emaciation. Skin and mucous membrane rather pale. The tongue was not coated. There remains some epithelium, but the surface is rather bare on the whole.

Pulse, 86; respiration, 18; temperature, 99.4.

Blood: Hemoglobin, 60 per cent.; red cells, 4,3600,000; white, 9,300; polymorphonuclear leukocytes, 63.2; large lymphocytes, 17.9; small lymphocytes, 18.7.

Feces offensive, very white, faintly acid. Leukohydrobilirubin present.

Urine normal.

Stomach contents: Only 15 c. c. were obtained. Total acidity 60 HCl. 20, CHCl, 12, acid salts, 29.

Physical signs: Liver begins in right mammary line at upper border of fifth ribs and extends to lower border of sixth. Abdomen shows nothing abnormal. Spleen, heart and lungs and abdomen appear to be normal. Kidneys in normal position. Under the treatment hereafter to be described the patient rapidly improved and was apparently well when last heard from, some six months after she was first seen.

Case No. 4.—C. P. C., aged sixty-three, female, white, widow, native of Georgia, was first seen January 24, 1907. Family history: Father died of "indigestion." One sister and one brother of dysentery, and one probably of apoplexy. Past history: About seven years ago, while living in Milledgeville, Ga., the patient had an attack of

bowel trouble lasting a few months. She was sent to Rockbridge, Va., and was much improved from a course of alum waters of that place; continuing this treatment after her return home she was finally apparently cured. Since this, however, she has had occasional attacks of diarrhea lasting from two to five weeks. At these times most of the trouble comes on from 10 p.m. to breakfast time on the following day; during this period she would have from one to eight stools—sometimes copious, and occasionally containing bloody mucus; no tenesmus. No history of indigestion.

Habits: Does not eat hot bread with butter. Takes one cup of coffee in the morning, but has not taken tea for five years. She eats much fruit, but not much sweets. She has false teeth, but chews well.

Present history: Present trouble began in November, as one of the attacks above described. A week or so later her mouth began to get sore, followed two or three weeks later by a similar condition of her throat. She was also affected with a like trouble in the vagina, accompanied by a whitish exudate.

Also suffered with salivation, some nausea and vomiting, and when first seen by Dr. Adams was having about twelve stools in twenty-four hours. During the last week the number has decreased to between two and three. She passes very little mucus, but no blood. The stools were greenish-brown in color, moderately soft and very offensive; movements very copious. No tendency at present for bowels to move during the night. There is no tenesmus. She has lost much flesh. General appearance anemic and moderately emaciated; skin and mucous membranes pale; tongue red on top and all around the edges; along the frenum it is covered with a whitish membrane. Some membrane also on the mucous surface of the cheek. Both mouth and tongue very tender.

Pulse, 80; respiration, 18; temperature, 99 to 100.

Blood, hemoglobin 85 per cent.; white cells 20,500.

Feces whitish in color and very foul; reaction acid:

some bloody mucus present. On microscopical examination a few pus cells were found, but no amebas or other protozoan parasites. Hydrobilirubin present.

Physical signs all normal; liver appears not to be atrophied. Mucosa of labia and vulva contains whitish patches similar to those on tongue. Skin on back of thumbs and first three fingers of both hands is very red—evidently being inflamed; a similar condition is present between the thumbs and forefingers, at which site there is a small scab on the right hand.

The patient died February 25th. Before death her mind became very feeble, and toward the end was almost in constant delirium, sometimes low and muttering and then noisy. Her temperature just before death ran from 100 to 103.

Case No. 5—Mrs. K., aged twenty-seven, female, white, married, native of Georgia; occupation, housewife; first seen February 2, 1907.

Past history: She had an abscess of the right lung from getting a watermelon seed in the bronchus. This occurred when a child, and her recovery was complete. Typhoid seven years ago. She moved to Nashville, Ga., three years ago. Some time after this she suffered from "indigestion," accompanied with formation of gas, and looseness of the bowels, especially at night and in the early morning. Shortly afterwards she got better.

The trouble again grew worse in November, 1906, at which time she had diarrhea, accompanied by slight fever.

Present history: Since the above date she has suffered from diarrhea, having two to eight stools daily. She still complains of gas formation in the stomach and bowels, and of indigestion. Her mouth has been very red and ulcerated a number of times. It is now better, but still much inflamed and between the back molars of lower jaw the gums are somewhat ulcerated; it was impossible to tell how extensive this lesion is, as the patient could not be made to open her month sufficiently. Has pain in throat. Suffers from occasional attacks of dyspnea

Vomits often. Persistent vaginitis. Her husband, who is a physician, says there is no ulceration. The skin of the hands has become inflamed a number of times, and is at present red and scaling on the back as far up as the wrist. Nervous symptoms severe. Occasionally she has slight clonic spasms. Mind dull and the memory is very much affected. She is much emaciated. Pulse weak and rapid—ranging from 90 to 136. Respiration, 20 to 32; temperature 98 to 100; tongue reddish at edges, and denuded of its epithelium to a great extent; is slightly coated in the middle. Lungs, heart, spleen and lymph nodes normal. Liver dullness extends from the seventh rib to the lower border of the ninth.

Feces: Reaction neutral. Dark (bismuth) and very offensive. No amebas or eggs of parasites. No blood or mucus. Hydrobilirubin present. Blood not obtained. Urine: Specific gravity 1030; reaction acid; albumen and sugar negative; indican not increased; both uric and hippuric acids present. The patient died February 6, 1907.

Symptomatology: From the foregoing it is seen that the clinical features observed in these cases correspond very closely with those that characterize this malady in other parts of the world. Here, as elsewhere, the affection comes on most insidiously, there being in the beginning more or less dyspeptic disturbances followed by a tendency to diarrhea, which is, as a rule, most common in the early morning hours, with periods during which the patient improves followed by exacerbations; the disease slowly increases in severity, and in the course of a greater or less length of time finally becomes so grave that the unfortunate victim suffers a continued diarrhea, loss of strength, emaciation and ultimately sinks into a condition of mental and physical asthenia followed by death.

As the disease progresses the patients' skin becomes very muddy and oftentimes shows pronounced pigmentation. It is strikingly characteristic of the disease as I have seen it—particularly in the later stages—that the skin of the

dorsal surfaces of the hands becomes inflamed, and even shows ulceration. Similar changes are also occasionally seen in the skin of the face. Swelling of the extremities is sometimes observed. One of the most characteristic features of the malady are the ulcers which develop both under and on top of the tongue, on the buccal mucous membrane, and on the gums, particularly between the last molars; ulcers are also sometimes observed on the pharynx. It is a marked peculiarity that the surface of the tongue is stripped of its epithelium coating—the surface becoming smooth and presenting a raw appearance; in the last stages the organ is more or less atrophied. As the disease advances the liver becomes very much decreased in size.

The stools have been, in every instance of the disease seen by me, of an acid reaction, a characteristic which was first pointed by Thin. Bill pigments were found in the stools in every case seen. In no instance have I detected the eggs of parasites, nor have the embryo of the strongyloides been present.

The temperature in this disease shows no great variation from the normal until the fatal termination is approached when fever varying from 99 to 103 is commonly found to be present.

The pulse is at first undisturbed, but as the affection progresses, considerable rapidity is the rule.

Salivation is pronounced in some cases.

Mental disturbances are usual in the later stages of the malady, the patient sinking gradually into a state of more or less complete dementia. Ulceration of the labia and vagina in women seems common in sprue as seen here—particularly in the later stages.

In two cases of the disease seen since this paper was prepared, there was complete achylia gastrica; both were in women and comparatively recent.

While the foregoing represents the course of events in a typical case of sprue, attention should be directed to the fact that in many instances the disease does not begin

in the characteristic way, thus we find that it may supervene directly upon dysentery, being apparently a sequel of this disease. I have seen recently a case of this kind. It is also stated by Manson that sprue may follow acute enterocolitis, though I have never personally observed this.

All writers call attention to the fact that there occurs what may be regarded as incomplete sprue. Thus instances are seen in which the disease seems limited to some particular portion of the gastrointestinal tract.

Thin recognizes three distinct types; the form in which the lesions are principally found in the mouth and throat; the variety in which intestinal symptoms predominate and in which the mouth is affected only in the later stages; and lastly that type in which the disease pursues a very chronic course—being found usually in elderly persons or those who have lived for a long time in the tropics. The last form of the disease is also encountered in those who first show symptoms of the malady after considerable periods of time after having returned to Europe.

The disease in tropical countries seems to vary in duration from one to two to from ten to fifteen years. With but one exception, the disease as seen by me was of long duration, and even in this instance it lasted nearly three years; it seems likely that the acuter forms of the malady do not occur in our climate, though this is a matter which only future observations can determine.

The disease, as it occurs here, appears to differ in no essential feature from the affection as seen in other parts of the world. Noteworthy, however, are the facts that my patients have not suffered from such marked dyspeptic disturbances as writers on the tropical form of the malady say is common, nor are the stools so uniformly of a whitish color, or so copious. It is very curious that in all of my cases where death occurred the final termination was preceded by a considerable period of time during which the patients lost almost complete control of their mental faculties.

It is noteworthy that inflammation of the skin of the back of the hands and of the face would appear not to be unusual in the later stages of the disease, as it occurs here—a peculiarity that I have not seen mentioned by foreign writers.

Etiology—Space does not permit a complete discussion of the etiology of this disease. As a matter of fact, its causation is not understood, though it seems very likely that it is not a parasitic disease. It is certainly not contagious, nor does it occur in epidemic form.

At one time it was believed that the Anguillula stercoralis was the etiological factor in this disease, but more recent investigation has entirely disproved this theory. No bacterium has been definitely associated with the malady, and it may be likewise stated that the same may be said concerning protozoan parasites.

There appears to be no doubt that diseases that are of an exhausting nature predispose to sprue; among these may be mentioned dysentery, diarrhea, hemorrhoids, fistula, frequent child-bearing, prolonged lactation, exhausting discharges, syphilis, enterocolitis and bad hygienic surroundings.

Manson, who is the greatest authority on tropical diseases, says: "Personally, I am inclined to regard sprue as an expression of exhaustion of the glandular structures subserving digestion, the result of over-stimulation by certain meteorological conditions which are found in tropical countries, and which are unsuited to the European constitution. The remarkable effect of physiological rest, as supplied by 'the milk treatment' in curing sprue, seems to support this hypothesis." This view is also supported by my recent observation of achylia gastrica in two cases of sprue in the early stages.

Pathological Anatomy—The most marked peculiarity of sprue consists in that there is atrophy and disappearance of the epithelial coating of the entire gastro-intestinal tract—the mucous membrane being gradually eroded, and finally disappearing.

Superficial ulcers are also sometimes found on the surface of all parts of the intestines, giving rise to the mucus and blood that are occasionally found in the stools. Cyst-like dilations of the crypts containing a muco-purulent material are also encountered. A marked peculiarity consists in the fact that the entire coat of the intestine is greatly thinned, this being particularly true of the muscular layers. The submucosa shows hypertrophic fibrous changes in some situations. The mesenteric glands are often enlarged and pigmented.

The liver undergoes gradual atrophy and finally becomes very small.

Unfortunately, I have been unable to secure a postmortem in any of my cases where death occurred, and I can not, therefore, say anything concerning the pathology of the affection from personal observation.

For the foregoing facts concerning the morbid anatomy of sprue, I am indebted to Manson, Scheube, Thin and other writers on tropical diseases.

Diagnosis—A diagnosis in well-developed sprue is very easy; the morning diarrhea, the dyspeptic disturbances, the ulceration of tongue, gums, lips and buccal mucous membrane, the white, frothy, copious stools, and gradual emaciation furnishes a clinical picture which could hardly be mistaken. As the disease advances all of the foregoing symptoms increase in severity, and we have, in addition, atrophy of the liver, loss of strength, profound anemia, eczema of the face and back of the hands, and greatly disordered mentality.

In the early stages, particularly in those where mouth symptoms predominate, the affection may be mistaken for syphilis, but the knowledge of the possibility of such an error should be quite sufficient to avoid it.

I have known in one instance of a very capable physician mistaking the condition for simple catarrhal stomatitis. It should be remarked that the disease might be mistaken for a mercurial inflammation of the mouth.

At the time that this paper was corrected for press, a

case was seen in which it would have been very easy to have mistaken it for pernicious anemia, and it was only after a most careful examination of the blood and the patient's symptoms that a conclusion was finally reached May it not be that these two diseases are closely related and are both dependent upon digestive errors?

Prognosis—The prognosis in sprue is always grave and leads certainly to death if the affection be not recognized and properly treated in the early stages. Four out of five cases seen by me have died and one recovered. The cases with fatal terminations were seen in every instance after they had existed for a considerable period, and all were in the last stages of the disease.

Treatment—The treatment of sprue is essentially hygienic, writers on this subject practically all agreeing that drugs are of no avail.

Of the methods employed, the combined milk and rest treatment is the one which has proven most successful. It is carried out as follows:

The patient is given a dose of castor oil and is put to bed, receiving no food until the bowels have thoroughly acted. In the beginning sixty ounces of milk are given in twenty-four hours, and as improvement occurs the quantity is gradually increased to three quarts, and even more if it continues to agree with the patient. In some individuals more than eighty or ninety ounces of milk produce indigestion; in these cases the patient may secure an increased amount of nourishment within the bulk tolerated by having the milk evaporated to the extent desirable, or by adding condensed milk.

Patrick Manson, the great founder of tropical medicine, especially insists that milk be given in moderate quantities, frequently repeated, and above all, he lays stress upon the necessity of taking the milk with extreme slowness. It should be sucked through a small glass tube, or taken through an infant's nursing bottle, the latter being the preferable way. It may be noted at this point that the bad repute into which the milk diet has more or less

fallen is undoubtedly in a large degree due to the fact that patients are not instructed to take it slowly. The average man drinks it very much as he does water, and under such circumstances it is little wonder that it produces indigestion.

Under this treatment, if the case be not too far advanced the movements are, as a rule, quickly reduced to the normal frequency and consistency. The *patient should remain in bed for at least a week* after this result has been accomplished, and he should continue upon a strict milk diet *for at least six weeks;* it is of the greatest importance that these two precautions be observed since a failure to do so entails with almost absolute certainty a relapse, and then the patient has to go over the entire treatment again. It is desirable that the patient remain practically at rest throughout the entire course of treatment. After six weeks have elapsed, and the bowels remaining normal, we may begin slowly and cautiously to add other articles of diet—in the beginning egg albumen, soups containing small quantities of starch well cooked, arrow root, and still later a gradual change to a full diet may be permitted. At any time during this period if the patient shows the slightest tendency to digestive disturbances, irregularity of the bowels, or if the mouth begins to get sore, he must at once be put back to bed, a dose of oil administered, and the treatment with milk resumed just as in the beginning.

Thin recommends that crumbs of well-cooked stale bread be the first addition to the milk diet, rather than the articles mentioned in the foregoing description; an ounce is given, and if this agrees with the patient it is repeated for three days, and if it still be well borne, a similar quantity is given twice daily, and if still no disturbance is produced an equal amount is administered thrice daily. If the patient continues to improve the quantity of bread is doubled, and after a week the amount still further increased. Butter may be eaten with the bread. This writer warns against the giving of eggs

early, stating that he has seen relapses occur as a consequence in several cases. Thin considers boiled fish an excellent addition to the milk and bread diet when the proper time arrives.

In some instances patients do not do well on the milk treatment, and under such circumstances it has been found that beef juice is sometimes well borne. Unfortunately the quantity of beef necessary is considerable—from twelve to twenty pounds being required daily. The juice is expressed and administered to the patient in the raw state.

In some cases, curious as it may appear, sprue has been relieved by an exclusive fruit diet even where the milk treatment has failed. The patient is given fruits of all kinds in quantities sufficient to allay hunger, and this is kept up until the bowels return to a normal condition. It is only exceptionally, however, that it is necessary to resort to this plan of treatment, and it is highly probable that it would be successful only in a very small percentage of cases.

In some cases whenever the patient attempts to return to solid diet dyspeptic disturbances are encountered. Under such circumstances a change from an albuminous to a farinaceous diet, or vice versa, may be of benefit. Manson recommends under such conditions what is known as the "Salisbury cure." This consists in giving to the patient a diet of meat and warm water. The meat should be of a good quality and free from fat and gristle, and should be well cooked. Small quantities are given in the beginning and gradually increased to three pounds daily if it be well borne. Warm water, amounting to four pints in twenty-four hours, is likewise given; it is taken before going to bed and on rising in the morning, and also about two hours before meals—never at meals. This treatment is persisted in for six weeks, and then is gradually changed to an ordinary diet.

In instances where diarrhea is extreme opium may be resorted to, but its action is always temporary and never

curative, and should, therefore, be dispensed with at the earliest possible moment.

All writers on the subject of sprue agree that a patient attacked with the disease should move to a cooler climate, but all are equally unanimous in the opinion that it is of the greatest importance that the patient should avoid getting chilled. For this reason it is advised that flannel be worn next the skin during the treatment, and for even a year after; it is particularly important to cover the abdomen well. Tobacco must not be used while the patient is under treatment.

In concluding this matter I wish most earnestly to insist upon the necessity of an early diagnosis in cases of this kind in order that treatment may be instituted before extensive organic changes occur in the gastro-intestinal tract. The treatment, if begun early, is highly successful —if late, it is usually without beneficial effect, and, though the patient may be temporarily somewhat improved, death is the inevitable result.

Except tuberculosis there is perhaps no other disease in which an early diagnosis is of such transcendent importance.

DISCUSSION ON DR. HARRIS'S PAPER.

Dr. Henry R. Slack, of LaGrange: I have enjoyed hearing Dr. Harris's paper very much, for the reason that what he has said with regard to sprue answers or clears up some of the cases in which I have put a big interrogation point after my diagnosis.

Some time ago I was called in consultation to see a lady who was said to be dying of tuberculosis of the bowels. The case was one which did not tally with any case of tuberculosis of the bowel I had ever seen. While I concurred in the diagnosis, because I did not know what else it could be, I think I shall find that it was a case of

sprue. The conditions I found correspond with those mentioned in the cases that have been reported by Dr. Harris. The temperature never went above 100 degrees; there was excoriation along the anus and alimentary tract; the patient's tongue is sore, the lips are sore, and she suffers more, I think, from vaginitis than from any other one thing, except the sore mouth. We put her on eggs and a milk diet, together with rest. That case has had a fatal termination, and has been put down as a case of tuberculosis of the bowel with an interrogation mark. I now think it was a case of sprue.

Dr. F. M. Cunningham, of Macon: It is agreed that the generally accepted method of management of these cases is the plan that has been adopted by Dr. Harris. The work of Manson, who is a noted authority on this subject, is certainly a masterpiece in the line of tropical fevers.

I saw one of the cases Dr. Harris has referred to, and was struck with the similarity to Vincent's angina. This patient developed ulceration in the mouth, which would lend more color to a different diagnosis.

I would like to ask Dr. Harris what relation he thinks exists between the diseases and the almost inevitable brain condition which follows. There was a lowering of mentality in the case I saw, which progressed to a positive delirium. I have been at a loss to account for the association of the two conditions. For a week or ten days the patient would go without any elevation of temperature, then there would be an acute exacerbation of the trouble. The last I heard of the patient was that he passed into a low condition of mentality, almost insanity, and I believe died in the condition of low delirium. The point of interest to me is, What was the relation between the disease and the lowered mental condition?

Dr. Richard V. Lamar, of Milledgeville: I would like to ask Dr. Harris what relation he think the sprue of which he speaks bears to that form of sprue which is spoken of by Musgrave and Strong as the sequel of ameba coli?

It may be of interest to Dr. Harris to know that we have found strongyloides in the intestines of three individuals who presented no evidence whatever of sprue.

I have had a number of cases similar to those described by Dr. Harris. All of my cases were insane women. The chief similarity lies in the fact that the cases I have seen were more acute; they ran a longer course than that which has been described by Dr. Harris. One of the most distressing things about it is the condition of the mouth. As a rule, in most cases the whole buccal mucous membrane, or roof of the mouth, sometimes, under the tongue is covered with a thick, dirty, whitish exudate, when first seen, and on removing this exudate hemorrhage occurs, and on reverting the lower lip the lip cracks. The condition he mentioned as having seen on the head, I have noted frequently. In one or two cases I have seen in the beginning the condition started in the form of a blister. The skin was puffed up, and sometimes when these blisters were punctured there would be under this layer semi-gelatinous matter.

Dr. M. P. Walker, of Milledgeville: I have never had an opportunity to assure myself whether or not I was dealing with a case of tropical sprue. It has occurred in connection with some other thing. I have now one case of pernicious anemia. I have had one or two of dysentery. In two or three cases in which the patients were masturbators the vagina showed practically the same condition as the mouth.

I have not obtained any blood count, other than an examination showed a moderate anemia, a decrease in red

cells and a slight increase in the whites, but there was no essential change in the different counts. I mention this case more to get some help from Dr. Harris and others, if possible.

Dr. W. B. Vaughan, of Ferrobutte: This paper was very interesting to me, because I have a case under observation in which I have been unable to make an accurate diagnosis. There are several other physicians who have seen the case with me, and we have made repeated microscopical examinations of the fecal matter, but failed to find anything of interest in the feces.

I would like to ask Dr. Harris to explain a little more fully the character of the skin manifestation. This case I speak of has an eruption similar to measles, which is manifested more on the back of the hands than at any other one particular point. She also has vaginitis, but not so marked as the manifestation on the back of the hand. This patient is a woman twenty-four years of age, married, and has borne three children. She gives a history of having been bothered with this trouble, or a trouble similar to it, since she was four years of age. The attention of a physician was not called to it until twelve months ago, when my attention was directed to the dysentery. She would have anywhere from two to twenty-four passages in twenty-four hours, of a decidedly mucous character, sometimes streaked with blood. I did not see any of this myself. In the fecal matter of some of the passages there was something similar to scabs as large as the little finger-nail. Sometimes half a dozen of these scabs would pass in one passage, and then for a week there would not be any scabs passed. Her temperature, since she has been under observation, has ranged from ninety-eight to one hundred and one degrees, seldom going beyond the latter, and the afternoon temperature was usually higher than that of the morning. She has

a sore, but not an ulcerative, mouth. Her tongue is not coated. I have not been able to detect any ulcers of any kind; but it has the beefy, red appearance, and at times, something like twice a month, this becomes exaggerated to such an extent that she can hardly eat anything. She is very anemic, and somewhat emaciated. I have had the case under observation for twelve months. I have been trying to get myself to believe that this woman has intestinal tuberculosis, but thus far have failed to do so. From what Dr. Harris has said in his paper, I am inclined to think she has sprue.

Dr. R. Lattimore, of Savannah: I want to report a case very briefly that came under my observation six months ago. This patient had had diarrhea for about two years, and when she came to me she had the characteristic picture of sprue—ulcers in the mouth and around the rectum. This patient, for a little while, improved, then began to grow progressively worse, and finally died. I have come to the conclusion that it was a case of sprue. That woman lived here in Savannah all her life. She was married, and during the last eighteen months this is the only case that has come under our immediate observation. She was a woman of the middle class. I consider the case of especial interest, because there are cases undoubtedly all over Georgia. It is important to recognize these cases, and make a diagnosis when we see them.

Dr. Harris (closing the discussion): In reply to Dr. Cunningham's question, that he has not been able to account for the peculiar mental changes occurring toward the end, as it is undoubtedly associated, in a measure, with great weakness of the patient, I am inclined to think that that is the entire cause of it, although I can not say so with certainty. I have noticed that these patients do not begin to show mental changes until they get weak, and usually only a week or so before death. In the first case

I reported the man showed some evidence of mental weakness for months before he died. The last time I saw him he was not himself. I learned at the time of his death that he was practically in a delirious condition, and had been for some little time. I believe the mental condition is associated with great weakness.

As regards Dr. Lattimore's remarks, sprue following dysentery, one of the recognized authorities on sprue (Manson), in his book, particularly refers to the fact that there is such a distinct form, and that it is a different type of infection.

Since this paper was prepared, within the last week, I have seen a case which began as dysentery, and has continued since. The man had dysentery some four months ago, and since that time the dysentery was quickly recovered from. It was the ordinary variety of it. He got entirely well, apparently, of the bloody flux. The bowels were loose afterwards, and have continued so up to the present time, showing the typical peculiarities of sprue. There is no doubt at all the disease follows dysentery occasionally.

With regard to the remarks of Dr. Walker, it is rather difficult for me to answer his question. I do not know what to say about it. There is one question I would like to ask him, and that is, if he noted a particular relationship between the changes in the patient's skin and mouth and bowels? Did they get worse together?

Dr. Walker: I did not note the relation in that respect at all.

Dr. Harris: In some of these cases the bowels are in a disturbed condition for years.

Dr. Walker: In the last case I had the bowels were disturbed for two weeks or more, and the mouth condition was such that it kept up.

Dr. Harris: We have to question these patients closely,

because the disease will appear and progress for a time, and then the patient apparently will get well. In the third or fourth cases of mine this thing happened a number of times. The patient took the waters at the springs; then came home and thought he was well, but in something like a year or more thereafter the trouble began again. We should question the patient closely as to whether he suffered from diarrhea for some time preceding the condition. It is rather difficult in my class of cases to get a history of that sort.

As regards Dr. Vaughan's question concerning the skin lesions, I know so little about diseases of the skin that it is rather an embarrassing question for me to answer. The only thing I can say about it is that the skin gets quite red and minute blisters form in the beginning, which reminds one very much of a beginning erysipelas. The skin becomes quite red and remains so for a time, but as the patient improves the skin trouble likewise improves, and the skin finally scales off. I should imagine it would be called a simple inflammation of the skin. I do not know enough about skin lesions to give it a definite name.

Concerning the case with mucus in the stools, it occurs to me it is very likely any case that presents a great quantity of mucus in the stools would not be sprue. The stools show comparatively little mucus in sprue. It is possible that this case might be one of amebic dysentery, and if there is mucus in great quantity, I should strongly suspect it.

In conclusion, since coming to this meeting, I have heard of a number of cases of sprue. One or two gentlemen in talking to me have casually mentioned that they have had cases which they thought were intestinal tuberculosis; the patients had sores in their mouths, but which they now believed to be sprue. I am quite sure

that there are hundreds of cases in the State of this kind, and if this matter receives the earnest consideration of our Georgia physicians, and these patients are treated in the early stages, we can certainly accomplish a great deal of good.

THE CAUSATIVE FACTOR IN THE PRODUCTION OF OTITIS MEDIA IN ATLANTA.

BY CLAUDE A. SMITH, M.D., ATLANTA.

About six years ago the writer began a series of examinations of cases of otitis media in Grady Hospital, and found in every instance that the condition was apparently due to a streptococcic infection. The first microscopical examinations indicated that the infective organism was an intracellular diplococcus. However, upon careful examination it was found that occasionally the organism would appear in chains of four or more cocci.

Growth upon culture media showed a typical streptococcus in each instance. The cases coming into the hospital were never seen before the drum membrane was ruptured, and it was therefore not possible to secure cultures before this rupture had occurred and the pus had become contaminated with the other organisms present in the external auditory canal. Therefore, the first examination of the pus always showed quite a variety of bacteria.

At this time Dr. Roy was using 1-5000 bichloride of mercury solution for irrigation in these cases and it was found that after irrigating the ear every two or three hours for a day or so, that all organisms would disappear from the pus with the exception of this streptococcus which was usually found inside the pus-cells and in pairs with an occasional short chain formation. There were about eight cases of middle-ear suppuration in the hospital at this time, and after irrigation with the bichloride

this streptococcus was present in each case in pure culture.

These cases appeared in January and February, and in a few weeks all had cleared up. The following winter at about the same time cases of middle-ear suppuration again appeared in the hospital, and under the same procedure the same organism was isolated in each case. Since that time cases of middle-ear suppuration have appeared in the hospital every winter, and in every case this organism has been isolated.

The infection is peculiar in that it almost invariably appears about the same time each year. Some years there have been not more than half a dozen cases in the hospital during the entire winter, and then again there have been as many as fifteen cases in the hospital at one time. Occasionally cases are seen at other seasons of the year, but this is the exception.

The disease appears to be mildly contagious. During one winter one of the nurses who had been nursing several of these cases developed a suppuration of the middle-ear and examination showed the same organism which was present in the cases which she had been nursing.

The attack is usually preceded by a cold or sore throat, but as the disease appears at the time of year when colds and sore throats are very common, this symptom is of uncertain significance. One of the first cases examined complained of slight tenderness about the joints, but this cleared up in a day or so, while the discharge from the ear continued for several days.

The amount of pain accompanying the conditions is variable. Some complain of excruciating earache before the rupture of the drum, while others give a history of very little trouble.

When the drum first ruptures there is a profuse discharge, pale mucoid pus, which gradually decreases in

amount and ceases in about a week or ten days. One ear is usually involved, but occasionally both may be discharging at the same time.

The interference with the hearing is usually not very great, and entirely clears up in a few weeks or months.

As before stated, when first observed in the pus, the organism appears to be in pairs, but further observation showed the organism growing in short chains of four or more cocci, and occasionally as many as twelve, or more. When grown on culture media, however, they produce chains of greater length. On solid media they produced small pearly pin-point colonies, and at 37 degrees Centigrade reached their maximum growth in about twenty-four hours. In a few days the colonies appear ragged at the edges and lose their pearly appearance. It grows at the ordinary room temperature, and does not die out quickly.

The organism appears flattened on both sides, and has very little, if any, tendency to group itself in pairs in the chain formation. Occasionally one or two will appear with a greater diameter than the adjacent cocci. The organism decolorizes by Gram's method of staining, but stains readily by ordinary dyes. In bouillon there is no diffuse cloudiness, but flocculent masses collect in the bottom of the tube and occasionally on the sides. Microscopical examination shows these masses to consist of a network of streptococci.

At first this organism was supposed to be the streptococcus pyogenes. However, its staining reaction did not appear to conform to this organism. Quite a variety of streptococci have been described from time to time by various investigators, and attempts have been made to classify these different streptococci. It is generally considered, however, that these streptococci found about the human body are types of this streptococcus pyogenes. In

1891 Von Lingelshein classified these streptococci as pathogenic and non-pathogenic. Under the pathogenic, he classified all pyogenic streptococci which grew into long chains and spoke of them as the streptococcus longus, and under this head he sub-classified the streptococcus murisepticus, and the streptococcus pyogenes, and also the streptococcus erysipelatos. Under the head of the non-pathogenic he classified the streptococcus brevis. In classifying these he speaks as follows:

"These can not be distinguished one from the other in cultures in highly albuminous media (pus, blood-serum), but present constant differences when cultivated in bouillon. The decisive characteristics in this medium are: macroscopic, the cloudiness of the medium; microscopic, the length of the chains."

Since this classification some investigators describe streptococci which conform to Von Lingelshein's streptococcus brevis, but they call the organism streptococcus pyogenes.

Goadby describes the streptococcus brevis which he finds constantly in the mouths of people, both in health and disease. While in the mouth this organism appears usually in diplococcic form, but grown in chains on culture medium. This streptococcus brevis resembles closely the organism which we have isolated from these cases of suppuration of the middle-ear. With the exception of slight variations in growth on culture media it appears identical, except that the organism that we have isolated does not stain by Gram.

Von Lingelshein also states that the brevis uniformly clouds the bouillon; the organism we have isolated leaves the bouillon clear, forming a deposit in the bottom of the tube, thus conforming to his description of the growth of the streptococcus longus.

From time to time various investigators have isolated

streptococci from cases of otitis media. Lævy and Schrader found a staphylococcus albus in pure cultures three cases out of ten in which paracentesis was performed. Netter found streptococcus pyogenes thirteen times in eighteen cases. Scheibe obtained the streptococcus pyogenes, diplococcus pneumoniæ, staphylococcus aurius, etc. Bordoni-Uffrenduzzi and Gradenigro found the diplococcus pneumoniæ to be the most common organism in middle-ear suppuration.

The fact that we have found only one organism in suppuration of the middle-ear is probably a coincidence, but that we have found the same organism in so many cases indicates that it is the most common factor in the production of otitis media in our section of the country.

THE TREATMENT OF THE BONE DEFORMITY OF THE THORAX AND SPINE IN SCOLIOSIS BY PLASTER JACKETS, UTILIZING THE EXPANSION OF THE LUNGS AS A CORRECTIVE FORCE.

BY MICHAEL HOKE, M.D., AND C. R. ANDREWS, M.D.,
ATLANTA, GA.

In November, 1903,[1] I (Dr. Hoke) reported the case of a young lady, upon whose ribs I had operated in order to correct a very bad deformity of the chest—the result of scoliosis. Previous to the operations she had had gymnastic treatment for a year and a half. This treatment had made her more flexible, but the deformity of the bones was as pronounced at the end of the treatment as it was when the treatment was begun. A number of attempts were made to conceal the deformity without success. At that time there was no known method by which the degree of bone deformity which she had could be corrected. The operations were therefore devised and performed. The details of the operations will be found in the reference.[2] Considering all the accompanying circumstances I may say the result is satisfactory. The patient presents no appearance of deformity with her clothes on without the use of pads, but she wears a celluloid corset. Her spine is still as crooked as it was before the operations were done, but the lines of the thorax from the armpit down are almost symmetrical. There is no prominence of either hip, the shoulders are in the same plane with the pelvis, and neither shoulder blade protrudes. Her circumstances were such that she was never

1 *The American Journal of Orthopædic Surgery*, November, 1903.

2 A Study of a case of Lateral Curvature of the Spine. A Report on an Operation for the Deformity.

able to remain in the city for postoperative exercises and massage. I may assert with accuracy that at the time these operations were done upon this patient it was impossible to accomplish the result obtained by any other method of treatment than the operation performed.

It occurred to me after the operation upon this patient, when she returned for a jacket, that the expansive power of the lungs might be used in these cases as a corrective force to fill out the flat areas, while the prominence of the chest were being prevented from expanding; hence the purpose was formed to try this experiment upon some cases as badly deformed as the case operated on in order to see if a similar result might be obtained by this simpler method. Thus no other patients were operated upon. While there remained a great deal of detail work to be done the progress made so far in this method warrants this preliminary report.

Figure 1 is a photograph of two complete "thoracic elements," the fourth and fifth taken from a cadaver selected at random, the lungs of which were normal. The term "complete thoracic element" is used to represent the bone ring formed by a vertebra, the attached ribs and the coextensive part of the sternum.

Figure 1 shows how symmetrical is the normal thoracic element. It is evident that in the growth and development in life of the thorax of which the element was a part, equal forces were at work at corresponding areas symmetrically expanding the element. These forces were the respiratory forces of expansion. Given normal lung tissue in both lungs, man's natural posture and no pressure upon the chest wall, the corresponding areas of the chest wall are subject to the same amount of expansive lung force eighteen times per minute. The bones of each

half therefore grow alike and thus the thorax is composed of two symmetrical halves.

We know that impairment of a portion of lung tissue is always followed by diminished respiratory expansion of the chest over the affected area. If the equal expansion over corresponding areas be made unequal by disease within the lung or of the pleura it is followed always, as we know, by thousands of clinical observations, by flattening of the chest wall over the impaired lung tissue. It is not the disease *per se* that flattens the chest wall; it is the diminution of the normal respiratory expansion force mainly that causes it. Also, we know by thousands of clinical observations that if through a period of time a portion of lung expands more than a similar portion of the other lung, the chest wall over the former will enlarge more than the corresponding area of chest wall over the latter—compensatory expansion.

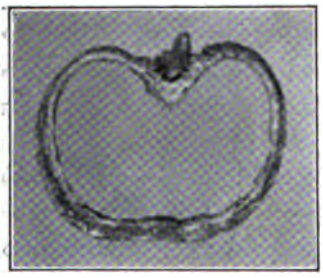


Fig. 1.

It is not disease alone that causes corresponding portions of the lung to expand unequally. Let a normal individual with naked chest stand in front of you. Lay the hands gently on corresponding areas of the chest, and direct the individual to breathe deeply. One feels the equal expansion of the chest beneath the right and left hands. Press very gently upon the chest with the left hand; the chest wall beneath the right hand is felt to expand much more forcibly than when there was no pressure with the left, and the expansion is greater than normal. Try this simple experiment with the hands on

any areas. If they be corresponding ones the observation is still correct. If a normal person stands, bends the head and the body to the left so as to assume a right convex scoliosis (viewed from the back) the result upon the expansion of the chest is as follows: the left anterior half (by "anterior half" is meant the area from the mid line in front to the mid axillary line; by "posterior half," from the spine to the mid axillary line) of the chest expands much more than when standing erect, which we shall call the normal, the right anterior half expands much less than normal, the left posterior half expands less than normal. It makes no difference whether the person, preserving the assumed right dorsal scoliotic position bends in forward flexion at the same time, or in hyperextension. There is some difference in the degree of the expansions, but this does not affect the principle involved. One of the reasons for the decreased expansion of the right anterior half in this simple experiment is that by the posture the right intercostal fascia and muscles and abdominal fascia and muscles are put upon the stretch; this makes the right anterior half more tense than normal, which is added to if the head be far to the left by the sternocleidomastoid and scaleni pulling upwards upon the clavicle and first and second ribs. The chest wall over the front of the right lung becomes somewhat tense, and this condition offers opposition to the expansion over the area in question. So easily is the symmetrical expansion disturbed that this slight resistance is sufficient to cause the other side to expand more than the normal degree. The right posterior half expands more than normal because of the lessened expansion in the right

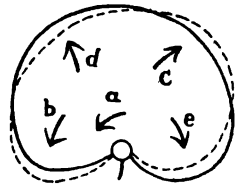


Fig. 2.

FIG. 3, CASE I.—Patient standing; right convex scoliosis; before treatment.

FIG. 4, CASE I.—Patient bending forward; right convex scoliosis; before treatment.

FIG. 5, CASE I.—Patient lying on his back; right convex scoliosis; before treatment.

FIG. 11, CASE I.—After seven months of treatment. (Compare Fig. 3.)

FIG. 12, CASE I.—After seven months of treatment. (Compare Fig. 4.)

FIG. 13, CASE I.—After seven months of treatment. (Compare Fig. 5.)

front half; the left posterior wall expands less because of the increased expansion of the left anterior half. The import of this is better understood by expressing it graphically.

In Figure 2 the dark lines represent an element of a normal person. In this element when the person is erect the respiratory expansion is symmetrical. Let the person assume a right convex scoliosis with slight forward flexion. There is immediately a rotation, great or less as the case may be, of the vertebra in the direction of the arrow a, and a tendency for the whole bone ring, the element, to so rotate. Immediately, too, as determined before, by feeling the expansion, the element is

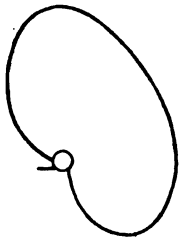


FIG. 6.

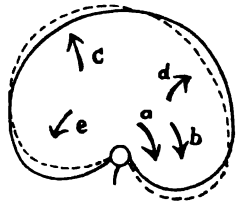


FIG. 7.

subjected to an expansive force in the direction of the arrows b and c greater than ever before, and the expansion is not so great in directions of the arrows d and e; thus each time the person breathes the shape of the element is changed slightly to the figure illustrated by the dotted lines. This happens eighteen times per minute to all elements participating, in greater degree to the most flexible.

Notice in Figure 4 the rib prominence on the right side of the spine and the depression on the left side of the spine. Notice in Figure 5 the prominence of the left anterior half and the flatness of the right anterior half

FIG. 9, CASE III.—Photograph of patient lying on her back; left convex scoliosis; before treatment.

of the chest. The elements in this thorax are similar in shape to Figure 6. See how Figure 6 corresponds to the dotted lines in Figure 2. Figure 6 is exaggerated.

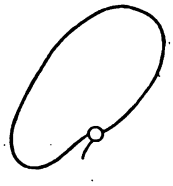


FIG. 10, CASE III.

Upon examination it was found that with each inspiration the boy's chest over the left anterior half expanded more than the right anterior half, and more over the right posterior half than over the left posterior half.

During the three years the deformity was developing

the posture, dependent in this case upon a short leg plus "skeletal insufficiency," caused the respiration after the manner indicated to force out the chest where the respiration was increased, and the chest to flatten where the respiration was decreased. This agrees with the observations on the shape of parts of the chest influenced by decreased respiration in one part and increased respiration in another part.

If the individual by bending to the right assumes a left convex scoliotic posture, the result upon the respiratory expansion is the opposite of that produced by the right convex scoliotic position. In this instance the right anterior half of the chest expands more than normal, the left anterior half less than normal, the right posterior half less than normal, the left posterior half more than normal. The effect upon each element then is as illustrated by the dotted line in Figure 7.

Figure 8, Case III, shows the prominence of the ribs in the left posterior half and the flatness of the right posterior half, while Figure 9 shows the same patient lying on her back. At a, the right anterior half, the chest is more prominent than the left anterior half. The patient's left costal border was more prominent than the right costal border. The latter fact is more apparent in the photograph, which was recently taken. No photograph of this patient in this position was taken before treatment was begun. An element in this case in the upper part of the chest had the shape shown in Figure 10.

See how this corresponds to the dotted lines in Figure 7. Examination of this patient's respiration showed increased expansion over the upper part of the right anterior and left posterior halves and decreased expansion over the left anterior and right posterior halves, no mat-

FIG. 8, CASE III.—Photograph of patient; left conxex scoliosis; before treatment.

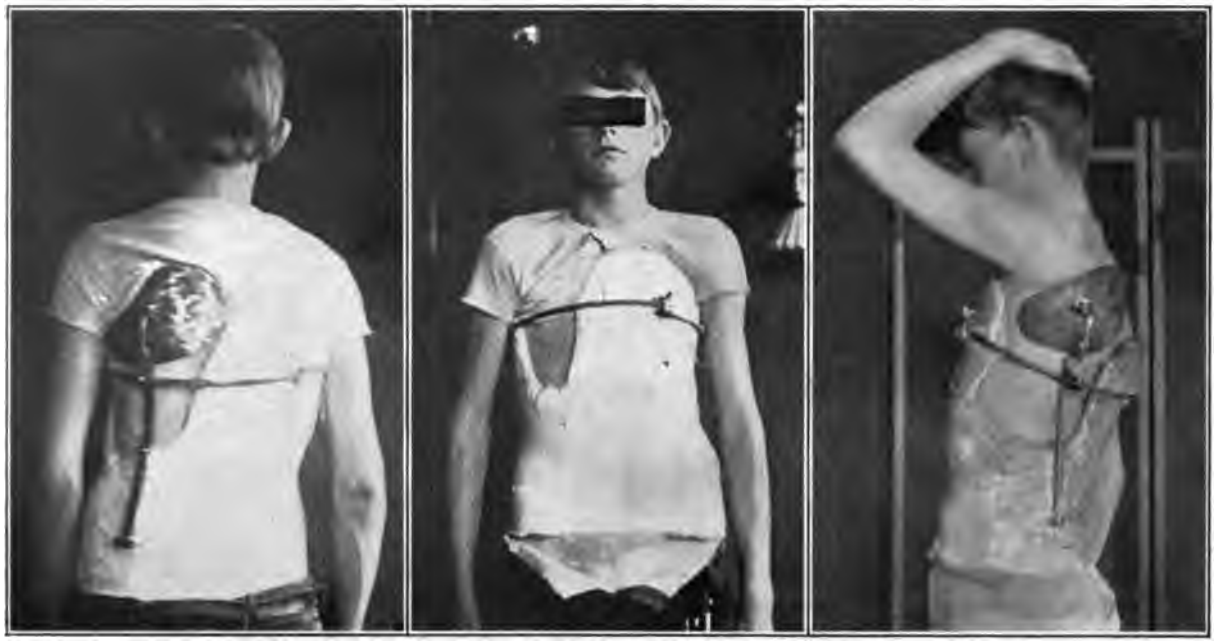


FIG. 14, CASE I.—With jacket on; back view. FIG. 15, CASE I.—With jacket on; front view. FIG. 16, CASE I.—With jacket on: side view

ter what the posture she might assume the type of scoliosis was not changed.

It is plain from the foregoing illustrations and statements of fact that the respiratory expansion forces induced by the scoliotic posture, no matter what may be the original cause of the spine bending, tend to produce the same type of chest deformity as the rotary force, are in themselves rotary forces, and add to the torsion of the spine while their predominance in one part of the chest materially assists in forming a prominence of the thoracic wall, and in another part their relative weakness permits the chest to flatten. As the shape of the ribs and therefore the shape of the thorax is dependent upon the foregoing, it is plain that these forces must be continuously opposed in the treatment of the bone deformity.

Cases I, II, and III will illustrate the result upon them thus far from acting upon these principles.

Case I has been under treatment by correction jackets since May 1, 1906.

Case II was under treatment by correction jackets for fourteen months. He was a carpenter. Nine months ago he left the city and has not returned. Circumstances prevented his receiving gymnastic treatment subsequent to the use of the jackets. I have written several letters to him, but have received no reply.

Case III has been under treatment intermittently for three years. Twice she went for six months without a jacket, several times she has gone for one and two months without a jacket. In order not to have too many illustrations, only these cases of extreme deformity are reported in this article.

Figure 3, Case I, is a photograph of the back when treatment was begun, May, 1906. Figure 11 shows the same view November 26, 1906. Figure 4, taken with

FIG. 17, CASE II.—Under treatment.

FIG. 18, CASE II. - After fourteen months of treatment. (Compare Fig. 17.)

FIG. 19, CASE II.—Under treatment.

FIG. 20, CASE II—After fourteen months of treatment. (Compare Fig. 19.)

patient bending forward, outlines the prominence of the right of the spine when treatment was begun. Figure 12 is a similar view taken November 26, 1906. Figure 5 is a photograph of the patient taken May, 1906, as he was lying on his back. Figure 13 is a similar view taken November 26, 1906.

Figure 14 is a view of the back of the patient in the jacket and apparatus. This was taken August, 1906. All the steel parts of the apparatus were detachable. They were worn in the day and removed at night. The plaster jacket, of course, is nonremovable. At present a different combination of plaster and apparatus is being worn by this patient. Figure 15 is another view of the patient with jacket on. Figure 16 is a side view of the patient with jacket on. The combined jacket and apparatus pushes the thorax beneath the left shoulder forward. Note the very large fenestra.

The examination of Case II showed diminished respiration over the anterior part of the right lung and posterior part of the left lung, increased respiration over the front part of the left lung and back part of the right lung. Naturally, then, the shape of the chest elements was the same as in Figure 6, the same as in Case I, for they are the same type of scoliosis. Compare the rib prominence and flatness in the back with similar photographs of Case I. Unfortunately I did not get a photograph of the shape of his chest in front in the beginning; the contour was like that shown in Case I, prominence in the left anterior half, flattened in the right anterior half. Figure 17 is a photograph of Case II, when treatment was begun. Figure 18 is a similar photograph taken nine months ago at the end of fourteen months' treatment. Figure 19 is a photograph of Case II, bending forward, showing the rotation and prominence of the ribs on the right of the spine before treatment

was begun. Figure 20 is a similar photograph taken at the end of fourteen months' treatment.

Figure 21 is a photograph of Case III, taken three years ago. Figure 22 is a photograph of Case III, similar to Figure 21, taken very recently. She has been without a jacket seven months. Figure 8 is a photograph of Case III, taken before treatment was begun, bending forward, outlining the prominence of the ribs on the left of the spine. Examine this photograph closely and it will be noticed how small is the transverse diameter of the half of the thorax to the right of the spine. It is noticeable, too, that the angles of the ribs on the right of the spine have been straightened and obliterated. It is not so plainly shown in the photograph as it was upon the patient.

Figure 23 is a photograph taken recently, similar to Figure 8. Examination of this photograph shows that the transverse diameter of the right lung space, of the right posterior half of the chest, has been increased and that the ribs on the right side are regaining their anatomical shape. The angles of the ribs are forming again. Not so much improvement is shown here as in the other cases. The treatment has been too intermittent, and only recently has an appropriate apparatus been devised for the application of the jackets, making the technique accurate for this case. No photograph of this patient lying on the back was taken in the beginning to show the prominence of the right front half and the flatness of the left front half, which would be expected in convex scoliosis from what has been said in the first part of the paper. Figure 9, taken recently, shows, however, that such is still the case.

None of these cases have had any treatment for the correction of the deformity but jackets and apparatus applied on the principles laid down herein.

FIG. 21, CASE III. FIG. 22, CASE III. FIG. 23, CASE III.
After treatment. (Compare these three photographs with Figs. 8 and 9.)

The interpretation of these plain facts forces upon us certain principles which must be applied in the treatment of all cases of scoliosis where there is any deformity of the chest. It is evident from the foregoing that if a plaster jacket even touches the chest it limits the expansion at that site; if it touches everywhere it limits the expansion of the area it is desired to fill out as well as the area it is desired to keep from expanding. Nothing must touch the area desired to be filled out; not even a gauze shirt. A careful study of the thorax by observation, palpation, and auscultation must be made to find out what parts of the lungs are expanding too little and what parts too much.

The jacket must be put on so that while it is being applied the rotary forces and the deforming respiratory forces are opposed. This can not be done unless the jacket is applied with the patient in the position seen in Figure 24. The weight of the body must be used as a counter force, so that the corrective force, while it is being applied, may not be lost in some compensating motion due to the patient's voluntary giving to the pressure. The patient's legs must be elevated, otherwise he will yield in the lumbar region to the pressure applied to the prominence of the ribs. This elevation of the legs prevents undesirable lordosis. The jacket must not be applied with the patient in the upright position, nor lying face downwards on a stretcher. The apparatus shown in Figure 24 has been found after much experience to be simple and susceptible to use in applying the principles. In a later article the details of its construction will be given.

Suppose Case I—right dorsal scoliosis—to be upon the apparatus, the legs are elevated, the pelvis is clamped, the apparatus applied as is shown in Figure 24. Figure

25 illustrates how the corrective force is applied to the elements while the jacket is being applied.

When the pressure is applied the chest elements assume, say, the position of the dotted lines. After the plaster has hardened the pressure pins are removed. The next day the plaster is cut away from over the areas of the chest it is desired to fill out. Thereafter, so long

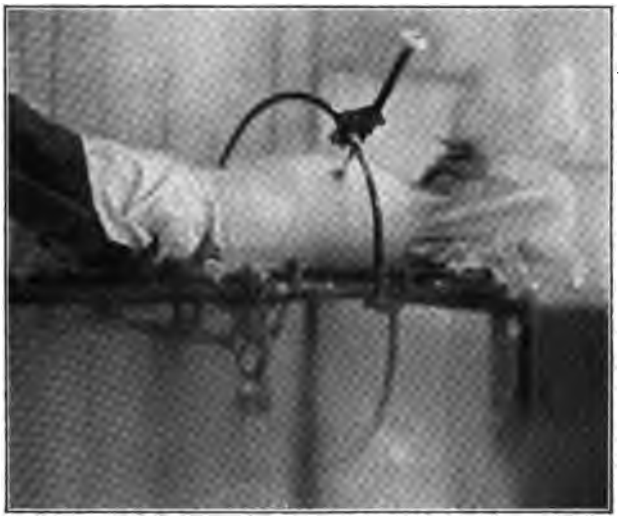


FIG. 24.—Position of patient for appliance of jacket.

as the jacket is worn the respiratory expansion is concentrated upon the flat areas now free to expand, while the plaster over the prominences keeps the lung beneath the prominences from expanding but little. The shaded areas represent the plaster left over the chest prominences in order to prevent the expansion of the lungs beneath. The gaps between the shaded areas correspond to the areas of flattened chest wall left uncovered by plaster,

and beneath which the respiratory forces are compensatorily increased. Steel pieces are incorporated in the plaster to which are attached any steel attachments it may be found necessary to use to hold the shoulders,

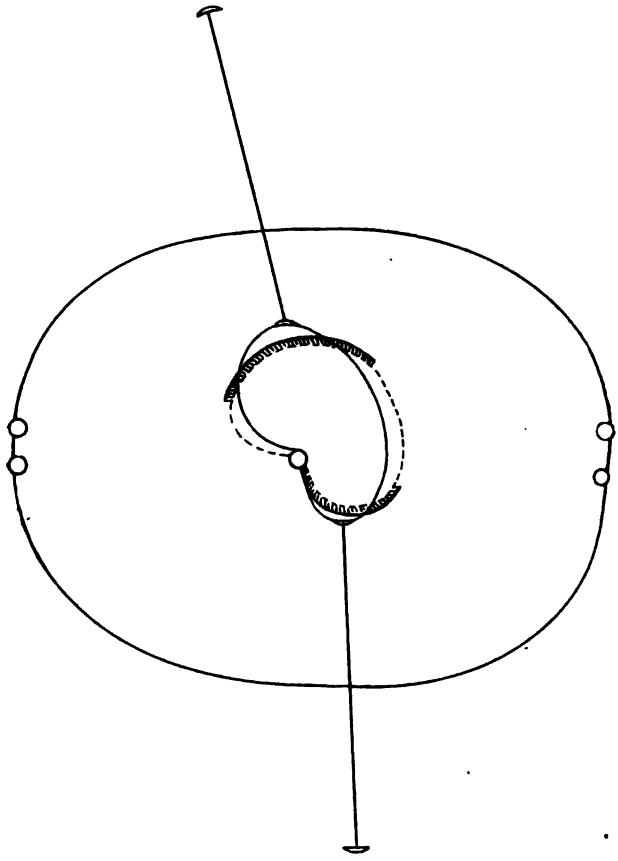


FIG. 25.—Diagram illustrating method of applying force.

head or the upper exposed parts of the chest. This feature is illustrated by the photographs of Case I.

The requirements for appropriate treatment of these cases taxes one's ingenuity to an extreme degree, for

no two cases are alike, therefore, one can not lay down more specifically the details of application of the principles. These details vary and must be worked out in each instance. The cases show great improvement in the shape of the thorax, marked decrease in rotation, and improvement in the curve of the spine. In a later paper skiagraphs of Case I will be presented.

Conclusion.—The result obtained by reversing under pressure the method of respiratory expansion in these cases of scoliotic deformity must force one to conclude that: The disturbance of the symmetrical expansion by its dynamic influence upon the ribs must be a factor in permitting the spine to bend and therefore be a constant influence in the rotation of the spine, as well as a most powerful factor in determining the shape of the deformed thorax associated with the scoliosis; that in the treatment of the condition these principles must be applied in the treatment of the bone deformity.

It is not intended in this article to minimize the other causative factors, anatomical, static, physical, etc., so long and correctly recognized as causative influences in the production of the deformity. Whatever cause may produce the scoliotic posture, increase the respiratory forces in a part of the chest, diminish them in other parts as explained in this article, so that this changed respiration *adds to the rotation,* forces the chest wall into a prominence where the respiration is exaggerated, and permits the chest to flatten where the respiration is diminished. The vicious circle is made complete by this alteration of the respiratory expansion.

DISCUSSION ON DR. HOKE'S PAPER.

Dr. Armstrong: I would like to mention one case of mine in which this principle was applied by Dr. Hoke. The case was that of a woman whom I saw about four and one-half years after an incomplete operation for empyema.

The front of the rib had been removed and the wound had healed, but the empyema had not gotten well and a sinus had formed. When I saw her two and one-half years afterwards the entire chest wall on that side was flat. In deep respiration the ribs failed to move at all. Respiratory murmur was present at the apex and in the rear, just to one side of the spinal column. My idea at the first was to remove a section of several ribs behind and endeavor to break up the old adhesions binding the collapsed lung.

I removed a section of one rib and found the pleura half an inch thick and the condition so very bad that I did not go further, but put in drainage and asked Dr. Hoke to apply this apparatus and see what could be accomplished. He applied the apparatus as in this illustration, which he uses here (showing illustration). He cut out the whole of the cast on one side and in a week's time after the jacket had been applied you could get respiratory murmur over the entire diseased side of the chest except a small area. At each respiration these ribs came out perceptibly. The condition of the patient improved remarkably in a week's time. Just a day or so ago he re-applied the jacket with more pressure at this point and I believe the woman will be straight and I know she will have a functionating lung on that side.

I do not believe any other procedure would have accomplished what this will accomplish with this patient.

Dr. Andrews: Dr. Hoke has referred to the treatment of other spinal deformities, and I simply want to enter my protest against the constant wearing of plaster jackets in Pott's disease which enclose the entire chest, or any form of corset or apparatus which encloses the entire chest and which markedly interferes with the normal respiratory function.

Oxygen and normal respiration are two items very necessary in the growth and development of a child, and without which power of resistance can not be increased.

If the child's chest be encased in any form of apparatus, the amount of oxygen taken into the lungs is diminished and the abdominal type of respiration is substituted for the normal respiratory function.

It is impossible to exactly immobilize the spine, and that form of apparatus is best which obtains the maximum amount of immobilization and at the same time permits respiration to go on in the normal way.

This can be accomplished by splitting the cast down the sides, and several times a day, with the child on its back and with the anterior half removed, have it take breathing exercises; or by cutting away the upper anterior part of the cast and holding the child's spine firmly against the posterior part by strapping back the shoulders, using the abdomen and pelvis to hold the lower part of the apparatus.

I wish to mention one case and the result which was obtained by this procedure. The young man in question had been suffering from Pott's disease of the dorsal spine for seventeen years, and was wearing a canvas corset re-inforced with steel, which constricted in all parts the entire chest. He had been going North once a year to have this apparatus reapplied. When first seen he had three-quarters of an inch expansion, his

respiration being almost entirely abdominal. All that was done for him was to permit him to breathe and to use his lungs in the normal way by the method above designated.

In seven months from that time he gained twenty-seven pounds, had grown two inches and had developed two and three-quarters inch expansion, with a corresponding improvement in his general condition.

Dr. Hoke (in closing): I have never put on a piece of apparatus encasing the entire chest and allowed it to remain. In Pott's cases it is the custom in most clinics to allow the jacket to remain on the patient for a month and then another jacket is put on.

The case which Dr. Andrews mentions was one in which the growth of the patient was interfered with by inhibiting the breathing. If you will put your hand on a person's chest you can detect a movement even with the least respiration. If the ribs are firmly held in a plaster cast the patient breathes abdominally and where the patient is bound up for years his development is inhibited. It has been the custom in the past to do this. The men who still apply jackets in this way are simply following tradition and they are overlooking the fact that the more oxygen you get into the lungs the better for the patient.

Here is a photograph of a child that had Pott's disease for a number of years and came to see me about two and one-half years ago. You can see the flattening of the chest and the lordosis of the spine. This another photograph of the same child taken several months later. You can see the well rounded chest and a remarkable gain in weight.

Here is another patient. This boy had the disease at the twelfth vertebra, and you see he has grown and developed like a normal child.

This is another case of a young lady with Pott's disease, and this picture shows the same young lady with the same principle carried out.

In Pott's cases I divide the cast into two halves. This photograph illustrates the method of developing the chest. You see the posterior shell arranged so that no binding of the jacket takes place and the body is held accurately in position and the patient can expand the chest.

Dr. E. R. Corson, Savannah: I would like to express my appreciation of Dr. Hoke's work. Dr. Sayre began putting supports on children's feet and accomplished great things. This principle of Dr. Hoke's is a beautiful one and I can not imagine any other possible way of overcoming a deformity of this kind. When we breathe so many times every minute we can readily see how natural this method is.

I would like to express my appreciation of Dr. Hoke's paper. Dr. Sayre, years ago, the pioneer in orthopedic work in this country, used an elastic apparatus on young children for the correction of club-foot, "the child," as he put it, "kicking himself straight." Dr. Hoke is carrying out a similar principle—the patient is compelled to breathe himself straight. When we remember that we take eighteen to twenty breaths every minute, we can realize how efficient this principle must be.

MINUTES ON SECTION OF SURGERY.

MORNING SESSION—APRIL 17, 1907.

The meeting was called to order at 11:30 by Dr. W. W. Owens, of Savannah.

Dr. T. J. Charlton read a paper on "Surgical Shock and its Treatment." Discussed by Drs. Travis, White, Corson, Harrell, Hoke, Armstrong, Jabez Jones, and Charlton (in closing).

Dr. Jabez Jones, of Savannah, read a paper entitled, "Apparatus for the Treatment of Fractured Femur," which was discussed by Drs. Travis, Harrell, White, Downing, Hoke, and Jones (in closing).

Dr. Eugene R. Corson, of Savannah, read a paper on "Suprapubic Prostatectomy," which was discussed by Dr. Jones.

Dr. J. L. Farmer read a paper on "Irritable and Hypertrophied Spinchter Ani; Causes and Treatment."

AFTERNOON SESSION—WEDNESDAY, APRIL 17, 1907.

Dr. E. C. Davis, of Atlanta, presented a paper on "Reports of Operations for Multiple Abcess of Pelvis with slough of Six Inches of Colon Subsequent and Anastomosis with Connell Suture; Recovery." Discussed by Drs. Jabez Jones, Warring, Kime, and Davis (in closing).

Dr. Craig Barrow, of Savannah, read a paper on "Matas' Operation for Aneurism; Report of Four Cases," which was discussed by Dr. White.

Dr. A. P. Hanie, of Hartwell, presented a paper on

"Rupture of Uterus; Escape of Fetus into Abdominal Cavity; Operation and Recovery." This was discussed by Dr. Davis.

MORNING SESSION—APRIL 18, 1907.

Dr. George R. White, of Savannah, read a paper entitled "Cystocele," which was discussed by Drs. Battey and White (in closing).

Dr. R. R. Kime, of Atlanta, read a paper on "Nephroptosis." Discussed by Drs. Battey, McRae, White, and Kime (in closing).

Dr. Michael Hoke, of Atlanta, read a paper on "A Further Report on the Influence of the Respiration Upon the Development of the Chest Deformity in Scoliosis, With Its Relation to the Application of Plaster Jackets." Discussed by Drs. Armstrong, Andrews, and Hoke (in closing).

Dr. Edw. G. Jones, of Atlanta, presented a paper on "Superficial Inguinal Hernia," which was discussed by Drs. Kime, Crowther and Jabez Jones.

Dr. Whatley W. Battey, of Augusta, read a paper entitled "A Plea for Careful Surgical Technique—Report of Case of Ante-partum Hemorrhage Due to Partial Separation of Normally Attached Placenta," which was discussed by Drs. McRae and Battey (in closing).

MORNING SESSION—APRIL 19, 1907.

Dr. F. M. Cunningham, of Macon, read a paper on "Discussion of Diseases of the Accessory Nasal Sinuses; Description of Operative Procedure on the Parts, Especially of Killian's; Report of Cases Done in Georgia," which was discussed by Drs. Corson, Hanie, and Cunningham (in closing).

Dr. J. M. Sigman, of Savannah, read a paper entitled "Surgical Anesthesia; Methods and Complications," which was discussed by Drs. McRae, Cunningham, and Sigman (in closing).

Dr. J. L. Jackson, of Savannah, read a paper on "Tuberculosis of the Bones With Report and Presentation of Cases." Discussed by Drs. McRae, Carter, and Jackson (in closing).

SURGICAL SHOCK AND ITS TREATMENT.

BY T. J. CHARLTON, M.D., SAVANNAH.

Surgical shock is that state of depression of the vital forces into which an individual sinks the result of a surgical operation.

The term is also used to denote a like condition the result of traumatism coming under the care of the surgeon.

The causes of shock are as follows: Hemorrhage, prolonged or incomplete anesthesia, exposure of the viscera, injury to nerve trunks or centers, crushing of the soft parts and bony structures, depressed vitality the result of previous ill health, exposure or starvation; prolonged operating.

In any given case of shock it is more than apt that two or more of these causes will be found combining to produce the condition existing.

Regardless of the cause or causes of shock the factors that are always present, predominant, and most vital are a lowering of the blood-pressure and a fall in the body temperature below the normal. These factors bear an ever constant relation to each other, and are elements of chief consideration in the successful treatment of shock.

Hemorrage in a wound otherwise trivial may produce the most profound and fatal degree of shock, yet when hemorrhage alone is the cause of shock and it is possible to detect and control the loss of blood and restore the blood-pressure by suitable treatment, the most brilliant results are obtained.

That hemorrhage can and does produce all degrees of

shock, and that its treatment is so successful, has led to the tendency of many surgeons of to-day to translate all cases of shock into degrees of hemorrhage, and thus to overlook or to lessen the importance of all other causes acting to produce shock.

General anesthesia is depressing to the vital forces, varying in degree with the individual resistance power. Prolonged anesthesia is in itself a source of shock independent of the operation being performed, the danger being proportional to the length of time the patient is kept under the anesthetic.

In incomplete anesthesia, while the patient may be unconscious to the degree of nonresistance, yet there is incomplete "blocking" of the irritation traveling along the sensory nerve trunks from the fields of operation to the centers of the vasomotor system, the danger from shock being in direct ratio to the irritation and exhaustion of these centers.

In operations on the viscera shock is most frequently met with.

According to the experiments of Crile, in operations on the abdomen, the amount of shock was directly proportional to the amount of traumatism inflicted upon the peritoneum, to the length of the incision in the abdominal wall and the time taken up by the operation. Traction upon the viscera during operation greatly increased the amount of shock. He also found that in operations on the lower half of the abdomen the shock was always less than in operations of the upper half, and that in the upper half the shock was always greatest the nearer the diaphragm and large vein trunks to the field of operation. Long incisions, free exposure of the abdominal contents to the air, free handling of the parts, greatly increase the amount of shock by the rapid radiation of the body heat, drying of the peritoneum, disturbance of the intravenous

pressure, irritation, overstimulation and exhaustion of the vasomotor centers.

Crile records that the more the omentum is allowed to cover the viscera during the operation the less the amount of shock.

Injuries to nerve trunks or centers, crushing of the soft parts or bony structures always tend to produce the most profound degrees of shock even though the injury be accompanied by practically little or no hemorrhage.

Depressed vitality, the result of ill health, exposure or starvation in proportion as they lower the normal resistance power of the body, tend to produce shock and to delay or prevent reaction following it.

Prolonged operating by exhaustion of the vital forces acts to produce shock, and the surgeon should bear this in mind in every operation.

The picture presented by a patient in shock is one of utter exhaustion, the face has a drawn, pinched expression, the skin is blanched and bathed in a profuse cold sweat, and the body temperature falls below the normal a degree or more. The respirations are quickened and so shallow that at times the eye can hardly detect any motion in the chest, the pulse is increased in frequency, but its more marked characteristics are a lack of volume, small size, and the ease with which it is compressed and disappears under the examining finger. As the shock increases the pulse becomes softer and quicker, its volume becomes less and finally it disappears entirely from under the finger. Mentally the patient may be abnormally acute and apprehensive, apathetic or delirious.

Of the various causes of shock the essential elements are as follows: Hemorrhage, exposure to cold either before or during operation, pain with irritation and exhaustion of the nerves.

When all these elements are present the shock will be

severe, though the injury or operation is otherwise trivial. On the contrary, with these elements safeguarded, the most serious injury or operation will be followed with little or no shock. Hemorrhage alone, according to amount of blood lost, will produce all degrees of shock.

Exposure of the body to low temperature will quickly bring about shock. This is very generally recognized by surgeons, as shown by the care taken to have the operating room sufficiently warmed and the patient's body well covered, both during the operation and after being returned to bed.

Pain and irritation of the nerves is a very frequent cause of shock and is especially noticeable in the crushing traumatisms of the extremities occurring among railroad, factory and workshop employees, in which the hemorrhage is frequently too little to account for the shock. Crile, in a series of experiments on dogs, resorted to crushing a leg, handling the viscera or strong irritation of the sciatic nerve to produce shock. On the other hand, he found that in operating on a patient with a crushed arm that exposing the nerve trunk, cocainizing and dividing it, the operation was followed with no shock.

As a fall in the blood pressure is the predominant factor in the causation of shock, it is well to consider to what the blood pressure is due and how its fall is brought about.

The blood pressure is made up of three factors as follows: Cardiac impulse, tonic contraction of the arteries and veins, and the volume of blood in the blood vessels.

The cardiac impulse is measured by the vigor and duration of the systole of the heart, during which period of time the blood is driven by the heart into the arteries, striking against their elastic walls and distending them. As the diastole of the heart begins the aortic valves close, the energy stored in the elastic walls of the arteries,

by the systole, recoils and the blood is driven onward through the blood vessels. The tone of the blood vessels is regulated by the vasomotor nerves, derived from the sympathetic system and controlled by a series of reflexes which in health regulate the lumen of the vessels to the varying demands of the tissues and organs of the body.

The cardiac impulse alone is insufficient to carry on the circulation.

The volume of blood, by its resistance, acts to keep up the blood pressure, and as the volume of blood diminishes the resistance becomes less, the heart energy falls off, and the blood pressure falls with it.

Irritation of the peripheral nerves or nerve trunks through reflex action in the vasomotor centres, causes first a contraction of the blood vessels with an increase in the blood pressure and if the irritation is increased paralysis or exhaustion of the vasomotor centres, with dilatation of the blood vessels and a fall in the blood pressure. As the blood pressure falls less blood flows to the heart, the cardiac impulse becomes less, the arteries and capillaries empty themselves and the blood collects in the peripheral veins and in the great vein trunks of the body, producing a stasis in the circulation or intravenous hemorrhage.

As the blood pressure falls there is a corresponding fall in the body heat, with increased activity of the sweat glands. The loss of body heat is due in part to the evaporation of the increased secretion of sweat, in part, to the radiation of heat from the stasis of blood in the peripheral veins and in part to depression of the heat centres of the sympathetic system.

If a healthy animal be bled until death takes place from shock and a postmortem be made, no lesions will be found. A patient reacting from shock shows no after effects. If an animal be bled until the heart action fails

and then be infused with normal saline solution, the heart will begin to pick up its work as the blood pressure is restored, finally returning to the normal.

Shock is a paralysis or exhaustion of the vasomotor centres and the failure of the heart is secondary to the fall in the blood pressure.

Surgeons differ much in their treatment of shock and in this very difference show a tendency to empiricism rather than to a careful consideration of the subject. The best work that has been done on this subject is by George W. Crile, A.M., M.D., in his monograph, "Blood Pressure in Surgery." In preparing this paper I have made free use of this work and desire to here make acknowledgment of it.

In a series of experiments to determine the effects of the remedies most frequently used in the treatment of shock, the following results were obtained:

"Alcohol, when intravenously injected, caused in most cases a fall in the blood pressure; in a number of cases no change took place in the blood pressure, while in a few cases there was a rise. There was no evidence that the heart beat more forcibly. In animals reduced to varying degrees of surgical shock, the usual effect of an average dose of alcohol was the production of a further depression; in smaller doses but little effect was noted, while in larger doses a more marked decline often occurred.

"In a few instances the administration of a considerable dose in deep shock was followed by almost immediate death. In a number of experiments in which alcohol was given prior to procedures intended to produce shock, it was not certain that it rendered the animal more susceptible. It is quite certain that the susceptibility was not diminished.

"*Nitro-glycerine and Amyl Nitrite*—The immediate effect upon the pulse was an increase in its volume and a decline in its frequency. The immediate effect upon the blood pressure in almost every instance was a fall. The decline was usually rapid. In the experiments in which the animal was in deep shock and the blood pressure was gradually falling, there was no evidence to show any decrease in the rapidity of the fall. On the contrary, as nearly as could be estimated, nitroglycerine distinctly increased the rapidity of the decline. In many instances the heart beat irregularly after the injection. On the whole, nitroglycerine and amyl nitrate increased shock.

"*Digitalis*—In the normal animal therapeutic doses of digitalis, intravenously administered, caused a rise in the blood pressure. The maximum was well sustained for a considerable time. The blood pressure finally resumed its previous level. The heart's action was considerably increased in force and appreciably diminished in frequency. When overstimulation was obtained by administering too large a single dose, or by repeating smaller doses, the heart became extremely irregular or the animal died suddenly from cardiac failure. In animals reduced to varying degrees of shock, digitalis usually caused a rise in blood pressure. When the animal was reduced to such a degree of shock that burning the paw or stimulating the sciatic nerve caused no rise in blood pressure, digitalis caused slight if any rise. Death in the digitalis experiments, even in those in which the dosage was only therapeutic, was usually more sudden than in the controls. It seemed on the average that cases of shock treated by digitalis did not live as long as the controls. It may certainly be stated that they did not live longer than the controls.

"*Strychnine*—In forty-eight experiments it was found that strychnine in therapeutic doses did not, on the aver-

age, cause a rise in the blood pressure. In another series in which the dose was gradually increased until the convulsive stage was reached, a remarkable rise occurred. Was this rise due to the muscular contractions in the convulsions? Not since an equal or greater rise occurred when convulsions were prevented by a preliminary injection of curare. Was the rise due partly to a simultaneous stimulation of the heart? No; since strychnine caused an equal rise in the blood pressure of animals, in which both vagi and both accelerantes had been previously severed and a paralyzing dose of curare given. It was, therefore, a pure vasomotor stimulant. A brilliant stimulant, indeed, sometimes doubling the normal blood pressure and lasting from thirty minutes to several hours. Each succeeding physiologic dose caused less effect, and after from two to four doses no appreciable effect was noted. The blood pressure in the meantime had fallen and at last reached the same level as in most profound shock. It was at this stage not possible by reactions, such as electric stimulation of the sciatic nerve or burning of the paw, to distinguish between these animals and the animals in profound traumatic shock. The vasomotor centers in each was exhausted. It was, in effect, shock produced by strychnine. Conversely, in a series of experiments in which strychnine was given in various degrees of shock, in such doses as to cause a stimulation, the effect was proportional to the degree of shock; that is when but little shock was present a marked effect from strychnine was obtained; when most profound there was no effect. In the intervening degrees, the effect was proportional, but after giving strychnine in physiological doses the animals not yet in complete shock always passed into shock of a deeper degree."

In surgical shock the danger lies in the falling blood pressure, due either to hemorrhage, which empties the

arteries, or to exhaustion of the vasomotor centres, causing extreme dilatation of the blood vessels with emptying of the arteries and capillaries and its accumulation in the peripheral veins and the great vein trunks. Why use a heart stimulant when the fault is due to a lessened supply of blood flowing to the heart and not to the heart itself? Why use a powerful vasomotor stimulant when the fault is already due to overstimulation and exhaustion of the vasomotor centres? Alcohol, we have seen, is utterly useless. Why use it? How, then, shall we treat shock? If due to hemorrhage, stop the flow of blood by ligating the bleeding points, or if this can not be done, then by hot water and compresses or by packing with gauze the bleeding area. Restore the blood pressure by intravenous infusion of normal saline solution. If this can be done and the vital forces are not too much exhausted from the hemorrhage, reaction will take place and the patient recover.

Intravenous infusion of normal saline solution acts purely in a mechanical way, and its action is not permanent or sustained unless the vasomotor centres recover from their exhaustion and the normal contractile tone of the blood vessels restored, or unless the shock be due to hemorrhage and this can be controlled, then the normal contractile tone returns to the blood vessels as the blood pressure approaches the normal.

If shock be due to irritation of the nerves, the one remedy called for and the one to depend on is opium. In pain and nerve irritation opium reigns supreme. It suppresses or inhibits the sensory nerve impulses, traveling from the periphery to the centres, it retards waste of the tissues, delays or overcomes exhaustion and thus gives to the vasomotor centres time to rest and to recover their energy. Begin treatment with an average dose of morphine, given hypodermically, and watch its effects:

if good it need not be repeated. If, however, no effects follow the first dose, repeat it at short intervals until good results are obtained or until the respirations begin to show systemic effects.

Never permit a patient in shock to suffer pain, for while the pain may not be the direct cause of the shock, yet its presence will always increase the degree of shock. While waiting for the morphine to produce its effects, resort to normal saline solution by infusion to restore the blood pressure. If the degree of shock be slight or moderate, the saline solution may be given subcutaneously or by enema. If, however, the shock be great, the solution should always be used by intravenous infusion. While saline infusion will always increase the blood pressure, its effects are but temporary, unless the cause of the shock can be overcome.

The infusion should be performed slowly and its effects on the pulse watched; if after a time the blood pressure begins to fall, the infusion should be repeated, but care should be taken not to use too great a quantity of the solution, for if this is done either one of two results may follow—the amount of fluid in the blood vessels may be so great as to disturb the heart's energy and cause a fall in the blood pressure, or the transudation from the blood vessels into the intestines and the tissues of the abdomen may be so great as to interfere with the action of the diaphragm, causing irregular respiration and depressed heart action.

Within the last few years it has been discovered that solutions of adrenalin possess remarkable power in increasing the blood pressure and that this power is due directly to the effects of the drug on the walls of the blood vessels.

In an experiment of Crile's with the animal decapitated and respiration maintained artifically, the circulation was

kept up for ten hours and the blood pressure could be controlled at will.

He found that the best method to administer adrenalin was by an intravenous infusion in normal saline solution of a strength from 1 in 50000 to 1 in 100000. As the effects of the adrenalin quickly pass off, the infusion should be used frequently. Excellent results can be obtained by the hypodermic method, the dose being 10 to 15 minims of a 1 in 1000 solution of the chloride of adrenalin, repeated every half hour or hour as required.

This use of adrenalin is still somewhat in an experimental stage and must be used with caution.

Subnormal temperature in shock should receive careful attention; the patient must be placed between blankets and the body carefully surrounded with hot water bottles. See to it that hot applications are placed over the heart and over both groins. Do not be satisfied with simply placing a hot water bag to the patient's feet; be thorough and keep up the heat until the body temperature rises to the normal; reapply it if the temperature is inclined to drop. Remember that a subnormal temperature in shock means death unless you are able to control it.

As the tendency of the blood in shock is to remain in the superficial veins, as well as in the great vein trunks, elevate the foot of the patient's bed so that the flow of blood is towards the heart, and if the shock is great, bandaging the lower limbs will raise the blood pressure by pressing out the blood in the superficial veins and thus increasing the flow to the heart.

Treat each case of shock in an individual way and do not permit yourself to slip into a routine way of treating all cases.

DISCUSSION ON DR. CHARLTON'S PAPER.

Dr. Travis: There is one point that he did not lay any great stress upon and that is in the use of cocaine. Dr. Crile stated that he was able to prevent shock by the use of cocaine before division of the nerves. He also stated that the amount of shock was due to interference with the venous circulation. He had good results with atropia and adrenalin, which produces a rise of blood pressure, but which is only temporary. The use of salt infusion by rectal injection gave very little result. The frequency of the heart beat was due to the fact that there was not enough blood in circulation.

Dr. G. R. White, Savannah: Since hearing the paper of Dr. Charlton my conscience has been troubling me a little.

If alcohol and amyl nitrate are of no use in shock and strychnine positively injurious, I have something to answer for. I was brought up to use them in large quantities until recently and I did not realize what I was doing. I think these ideas expressed are quite a revelation in the treatment of shock.

In the first place, I think that shock as an entity is diminishing. When we leave out the cases of hemorrhage and keep the patient warm throughout the entire operation the cases of shock will diminish very much. My experience indicates that the condition which we call shock is usually the result of either hemorrhage or chilling of the patient. The patient will stand a great deal of traumatism if you will control the hemorrhage. I think the ideas expressed will be of great benefit to us in the management of these cases.

Dr. Corson: I have enjoyed Dr. Charlton's paper very much. For a long time I have given up the use of strychnine and alcohol and have found nothing of any

value outside of morphine and atropine. I have never seen any good results from the use of strychnine, although many are still pumping it into patients. I think there is great danger from strychnine through over-injection by its effect on the spinal chord. I think the value of morphine in shock is due to the relief of pain and the quieting of the nervous centers.

There are so many things better than drugs, such as transfusion, the application of heat, and the prevention of the chilling of the surface of the body, that drugs play a very small part with me in the treatment of shock.

Dr. Harrold: I wish to say that at Johns Hopkins the routine treatment of shock was the use of saline under the skin. This was considered better than the transfusion, because it could be given much quicker, was absorbed readily and you did not have to take the trouble to open up a vein.

Dr. Hoke, of Atlanta: Dr. White's remarks turn my mind back about ten years. In extensive operations, such as amputation of the breast, it was very rare at Johns Hopkins that we got any shock at all. In these amputations of the breast Halsted's whole idea was to see that there was no hemorrhage whatever. He would use about 250 clamps in such an operation and he would have two assistants to clamp vessels as fast as he cut them and in this way very little blood was lost and there was no shock at all.

It was quite a common thing to have these breast cases out within a few days. He also used the saline infusion. In cases of operation upon children there is frequently delayed shock, which I am confident is due to acetone poisoning.

Dr. Armstrong: I think the Doctor has very thoroughly covered the ground, but I would like to bring out one point. He spoke of binding the extremities

in case of shock. I think this a bad practice, as the patient in shock should be handled as little as possible. To apply an Esmarch bandage requires considerable handling and as this handling tends to increase the shock, I think that the bandaging is generally contraindicated.

Dr. Jabez Jones: I want to emphasize the point brought out about hemorrhage as a cause of shock. While we recognize that hemorrhage is a common cause of shock, yet we do not sometimes seem to realize that a little hemorrhage long continued is likely to cause the death of a patient. In my hospital practice I have seen a great many cases in which there was a steady oozing of blood, resulting from a loosely applied tourniquet and as a result of this the shock was so severe that the patient did not possess sufficient vitality to recover. I have seen many of these cases that could have been saved if the hemorrhage had only been stopped as soon as the injured person was first seen by the surgeon.

Dr. Charlton (in closing): I wish to say that in writing my paper I realized that the time at my disposal was insufficient to cover every detail of the treatment of shock. I simply endeavored to outline the main points.

I called attention to the use of cocaine in blocking the impulse along the sensory nerves. It is of vast importance in a great number of cases, but for lack of time I did not dwell upon this.

As to the article being revolutionary, I think it is time that it should be. If we are satisfied that what we are doing is wrong, we should change. I have been convinced for a long time that the so-called heart stimulants were practically of no use. Of course if you take the milder degrees of shock I think you may get some result, but if it is greater than the milder forms you will not get any effect from them.

What is shock? It is an emptying of the blood vessels.

If hemorrhage from the vessels is the cause of this, then intravenous infusion will check that. But we have many cases that are not due to this. As a result of a blow upon the abdomen you may produce death in a man by paralyzing the motor system, resulting in a bleeding into the vessels of the abdomen. As we know, the vessels have sufficient capacity to contain all the blood of the body and as a result of a blow a man dies without rupture of any vessel.

In regard to bandaging the limbs, Crile, in his work, states that by the use of pneumatic pressures he was able to produce great blood pressure in all conditions of shock. This was done by driving the blood into the interior and increasing the flow of blood into the heart.

Atropine acts by increasing the vigor and prolonging the diastole of the heart. If the heart itself is not at fault and you restore the pressure in the vessels the heart will take care of itself. Where the heart itself is involved with lesions, of course the shock is more apt to be serious and therefore in such cases results fatally.

AN APPARATUS FOR THE TREATMENT OF FRACTURED FEMUR.

BY JABEZ JONES, M.D., SAVANNAH.

I do not wish to say that all fractured femurs should be operated upon, but there is a large percentage that will come to operation sooner or later, even when they have been treated by the most approved methods and in the hands of good surgeons. A large number should be wired as soon after injury as possible, because it is sometimes difficult to even elicit crepitus when fractured at certain points. When we have all the evidence of fracture and crepitus is not easily made out, we know at once that muscles are producing a wide separation of fragments and the only hope of a good result is to wire. I might say that nearly all fractures of the upper and lower thirds should be wired soon after injury because here the separation, because of muscular contraction, is very marked. Fractures of neck should often be wired or nailed. After failing to get a good result in a fracture of the neck with Buck's extension, I wired with good result, not perfect.

As it is necessary to wire a great many fractured femurs, I have designed this apparatus and these instruments to facilitate the work. I have designed them because of failure to get good results after wiring with other methods. All who have done this operation with the ordinary instruments and the application of plaster of paris, with assistants to hold bones in position, know of the difficulties and certainly some bad results. Wiring a fractured femur is one of the most prolonged, most cumbersome and often difficult operations it has been my

lot to witness. I have seen the most profound shock follow the wiring of a femur because of the prolonged operation, truamatism to tissue and loss of blood. No surgeon would permit any such delays when operating or bad results in abdominal work. He would at once, as they have done, devise instruments to facilitate the work and secure better results. A surgical operation should proceed smoothly, accurately, quickly and when completed we should get good results.

The ordinary bone drills are practically useless in drilling a femur. They do not drill clear-cut, round holes. It requires considerable time and effort on the part of the surgeon and after the hole is drilled it is often obscured and filled up by bone chips cut by drill, thus making the introduction of wire difficult.

Another difficulty is having the muscles well retracted, the fragments held firmly while being drilled and put in accurate apposition when wire is ready to be fastened. To obviate the former difficulties, I have purchased a small number-one machinist hand drill from a hardware store; using for drill points Morse's twist drill. This is made for drilling iron or brass. It will drill a smooth, clear-cut hole in the densest part of the femur in one minute. The spiral grooves carry out all bone chips. To obviate the other difficulties, Dr. Barrow and I have had made a pair of S shaped retractors with long handles. The points are placed to the inner and posterior surface of bone while the wide part retracts muscles. Thus we have good exposure, bones held firmly for drilling and by manipulating handles the fragments are placed in accurate apposition while wire is being fastened. But the one thing that contributes more than all others to the bad results in this operation is the appliance used to hold the fragments in apposition to keep them at rest and make extension. Plaster of paris is the favorite splint and should

be used in nearly all cases. But the usual methods for applying this are not satisfactory, that is, assistants, hip rests, basins turned upside down, etc. In the first place wire is likely to be broken when patient is moved from operating table to hip rests and basins. It is very liable to be broken while the plaster is being applied; this does occur and not infrequently. Conditions then are the same as before operation began. No assistants can continue the same amount of traction throughout the time traction is necessary. The plaster is liable to be broken while hardening by assistants moving leg, body or the basin slipping out of position. Any of these accidents are liable to undo the whole of the operation. This apparatus here was made with the intention of overcoming as nearly as possible, these difficulties.

Before the patient is anesthetized an ordinary Buck's extension dressing is applied to injured leg, not coming higher than knee. The apparatus is placed on operating table and as soon as patient is anasthetized he is placed on apparatus. Sacrum rests on angle iron, perineum snugly against counter extension post. Top of apparatus is a plane, thus making a good operating table. The operator now proceeds until the wires are ready to be fastened, then fasten Buck's dressing to windlass and make extension until ends of bones are accurately in position, now fasten wire. Rachet and pawl makes the extension constant and always the same. Wound is now closed, dressing applied, and all slats removed from heel to axilla. Pelvis and lower trunk are supported by angle iron; the uninjured leg is laid over side of frame and if necessary, one slat may be retained to help support injured leg. This is moved up and down as plaster is applied. We now have free access to the body from the toes to the axilla. Plaster is applied from toes to axilla without changing position of injured limb, while the ex-

tension remains exactly the same from time wire was twisted until plaster hardens, no part of the body being moved from time wire is fastened until plaster is hard.

A good quality of plaster should be used, that made by the S. S. White Dental Manufacturing Company being satisfactory. While plaster is being applied a small round paper box is placed over anterior superior spine and external malleolus. These are removed when plaster hardens. By having these two points exposed we can tell by measurement what is going on at site of fracture as regards position, as well as if we had ends of bone in our hand.

Because of the atrophy of muscles it is necessary to change plaster not later than every two weeks. If the exposed points indicate, change earlier. The surgeon who puts a fractured femur in plaster of paris and leaves it for six or eight weeks will get shortening just as certain as the bone is broken. When it becomes necessary to renew plaster, patient is placed on apparatus as before, slight extension made, plaster cut off and new applied. The original Buck's dressing remains until the patient is well. This appliance can be used in applying plaster for fractured femur when operation is not deemed advisable. Here make extension until the legs, by measurement, are exactly the same, then apply plaster.

We have found the field of usefulness for this appliance greatest in old ununited or overlapping fractures. In such cases, after the ends are freed all the assistants that could get hold of leg could not pull bones into position. Here, by having the adhesive a few times reinforced, applied to a large surface of the leg and firmly bandaged we have been able to get an inch more in length than we otherwise could. This violent extension is done slowly and carefully and I do not see how it can injure either vessels or nerves, because the contraction

is in the fibrous tissues and muscles. The muscles will stretch and if the fibrous tissue tears this is what we desire.

In the operation of wiring a fractured femur there are two points I wish to emphasize:

First—Never make an incision until you have rendered the limb bloodless. Hemorrhage is most alarming when a tourniquet is not used.

Second—Never operate unless you are assured of as near perfect asepsis as surgery gives us to-day.

DISCUSSION ON DR. JABEZ JONES' PAPER.

Dr. W. D. Travis, Covington: I have been very much interested in what the Doctor says about fractures of the femur treated by operation. We do not all have specially devised apparatus for treating these cases and are often called upon to treat them without any appliances. The plan I have used has been to employ a splint something like Hodgen's splint, which goes over the upper part of the thigh with the leg flexed and down below the foot. The foot and knee are put up in plaster, with which we expect to make our traction. We have rings on the wire splint at two points, on either side, and the weight is determined by a draw scale that is attached to the wire and ceiling and then by fixing the pelvis and moving the patient you can tell how much traction you have. In this way you can always determine the amount of traction we are giving to the femur. The patient is made comfortable and the leg swings from side to side and the bed pan can be used without any trouble.

Where operation is not performed it is a good idea to try this splint.

Dr. Harrolds, Macon: I have listened to the paper with a good deal of interest and have been wondering why the

doctor does not use the Royal Whitman method without operation in those cases of fracture of and around neck of femur.

Dr. G. R. White, Savannah: I think this is a very valuable apparatus which the Doctor has exhibited. Any one who has operated upon a fractured femur without any special apparatus will recall that they were very liable to get into trouble and any apparatus which renders us assistance in these cases will be appreciated.

To get good results with any kind of apparatus is an uncertain process. The limb may be put up carefully for six weeks and then upon examination if we find a shortening of less than an inch we are doing well.

While I am not prepared to agree with Dr. Jones that all fractures of the thigh should be wired, I may change my mind on that point when I have seen more of his good results.

There is one point that Dr. Jones mentioned that should be spoken of. After putting a limb in a plaster of paris bandage and leaving it without further attention you will not infrequently have a shortening of two or two and a half inches. Every time a plaster bandage is put on a fractured thigh and left in this way you are liable to get a permanent deformity.

Dr. Downing: I have been very much interested in Dr. Jones' illustration for the operation. I believe that of all cases there are more deformities resulting from treatment of fractures of the thigh than anything else. I have devised an apparatus by which we can treat them as well as anything else. I have used the double angular plaster, beginning at the base of the toes and used the double Esmarch plane, bringing it up to the knee so as to get muscular relaxation. After this sets, then go on up well onto the chest. In this way you get absolute fixation and you can always apply new dressings when necessary.

The two acute angles give a restful position and there is no use to keep up continuous traction. I have about twelve of these cases treated with this apparatus and they have less than one inch of shortening. These cases have been able to be out of bed and sit up in six or eight days. Many of them are able to get up to attend to the calls of nature.

Dr. Hancock, of Atlanta, has used this apparatus successfully in two cases. At the University of Maryland they have used it in four or five cases and had perfect results.

Dr. Michael Hoke, Atlanta: It delights the orthopedic man's heart to see any apparatus. I do not see many fractures in my work, but I do see many malformations resulting from the treatment of fractures. If the bones are put in position and held there we ought to get good results. Buck's extension should be thrown out of the window in treating fractures. It is all right to use Buck's extension in getting us into position, but plaster should be used to mobilize the parts. I am constantly working in plaster and see many bandages applied by other men. I think the majority of failures are due to the kind of plaster and the way it is used. The average doctor buys his plaster from the drug-store and gets a very inferior article. I do not agree that the dental plaster is the best, as the plaster should harden the same all the way through. You will find that the bandage on the lower part of the leg has hardened when you begin to apply the upper part and therefore it is impossible to get perfect results, as the bandage will be in two layers, which will cause it to peel. That is why you have to reapply these bandages so frequently. Instead of using the prepared plaster bandages, if you will make your own bandages, using nineteen parts of plaster and one part of cement, you will

have a bandage that will remain for months. In our work on the chest it sometimes takes half an hour to apply the bandages and it is necessary that it should harden slowly in order to prevent peeling. This slowing is accomplished by the addition of dextrin.

Immobilization is the necessary thing. To put the leg in the straight posture is all right when the fracture is not in or near the neck of the femur, but when you get to the neck you can not keep it in a straight line. I am constantly seeing old fractures of the head of the femur that have been treated with Buck's extension and the lack of union is due to the lack of immobilization. Dr. Downing has devised a most ingenious piece of apparatus by which immobilization can be secured. If you will immobilize the parts you will not have to send the case to the orthopedic surgeon afterwards.

Dr. White: I would like to ask Dr. Hoke if he has any trouble in getting off his cement plasters?

Dr. Hoke: I do not have any trouble in removing the plaster. The best thing with which to get it off is an ordinary I. X. L. splaying knife. If you will hack a line down the plaster and wash it with water, you can soon cut through.

Dr. Jabez Jones, of Savannah, (in closing): In reference to the dental plaster, this is the only thing that I have seen that we could use. If there be any better I would be glad if the doctor will tell us. As to the hardening, the S. S. White Company makes three different kinds of plaster, which harden with different degrees of rapidity.

In reference to Dr. Royal Whitman's treatment, I spoke of the wiring of fractures of the upper thigh because I did not get good results without it, as the muscles will pull the fragments out of position.

SUPRAPUBIC PROSTATECTOMY.

BY EUGENE R. CORSON, M.D., SAVANNAH.

Perhaps no operation of equal importance has so rapidly established itself as a legitimate procedure in surgery as the removal of the hypertrophied prostate. While the operation has been done for a number of years by a few men, it has not been a common one, and those surgeons who have attempted it could count on their fingers the number of their cases. But within the last five years the number of operators and the number of cases have so increased that not a week goes by without the appearance of some important paper on the subject, statistical as well as descriptive, showing improvement in the technique and in the mortality rate. It is a sign of the times in the medical world. The experimental spirit and the surgical spirit are abroad. For centuries surgeons cut for stone by the perineal route and the thought did not seem to have occurred to them to try another route; and if it did occur the experimental spirit was not sufficiently strong to induce the trial. But a change has come. From a mere servile following of a leader we have passed to an individual independence. The evolution of the idea of experiments has been accomplished, and the experimental spirit is abroad. There must always be the first one to try before we can advance. The first one who did the suprapubic operation for stone was a great man and a benefactor of his race. The first one who did a suprapubic prostatectomy was also a discoverer and a benefactor. The discoverers, however, are few, the followers are

many; yet each one is adding something to the rapid progress now going on.

At the present stage of the evolution of prostatectomy we find in this country, at least, a difference of opinion among surgeons as to the best route to follow. You find this diversity of opinion in the journals, and you see it at the medical meetings where the discussions become quite heated. This difference of opinion shows us that we have still much to learn about the operation and the conditions pro and con for surgical interference. The different standpoints of the specialists and the general surgeon may have something to do with these differences, those working more in the perineum favoring this route, while the man doing general work, and especially abdominal surgery, has no hesitation to enter the bladder from above. Prostatectomy is passing through an evolution through which hysterectomy has already passed.

My own views regarding prostatectomy are largely based upon four papers written by four American surgeons. First, the paper by Young, of Baltimore, which appeared in *Annals of Surgery* for April, 1905. He reported seventy-five cases. He stands as the chief exponent of the perineal route. Of these seventy-five cases four died, a marvelously fine record. He has elaborated a fine technique; he has invented a most efficient tractor for drawing down the neck of the bladder; his illustrations showing the different steps of the operation are beautiful and very seductive, and I can not see how his operation can well be improved upon where the operator chooses the perineal route. His paper is a real contribution to modern surgery, and I can readily understand how one who has attained such skill should not be inclined to try another route, unless the case plainly demanded it.

The second paper I would mention is by Dr. Guiteras,

of New York, and was read before the International Medical Congress at Lisbon in April, 1906. He argues eloquently for the suprapubic operation. He gives no statistics of his own or other operators, though he admits that up to the date of his paper the suprapubic route had a larger mortality. I doubt if he had had at the time of writing his paper anything like the number of cases reported by Young. He has elaborated a fine technique, fully up to the modern standard of operative work, and his paper may also be regarded as a real contribution to the subject.

The third paper is by Dr. Howard Lilienthal, and appeared in the same number of the *Annals of Surgery* with Young's paper. It is a paper of four pages only, without any illustrations. He tells his story in a few words, and assurance flows from every stroke of his pen. He reports thirty-one cases operated upon in the Mount Sinai Hospital, twenty of his own, and eleven of his adjunct, Dr. Joseph Wiener. He writes: "Operative recovery has occurred in every case of the thirty-one treated in the hospital, and perfect functional recovery in all except two, and even these two patients urinate without the use of the catheter. In one there is weakness of the sphincter, so that the man can hold only about three ounces of urine at a time. The other patient has a residual of 10-100 c. c., which I hope will disappear, especially as the suprapubic wound has been closed only about three months. He does not use the catheter and is apparently a well man." He describes a simple, rapid technique, he uses laughing-gas as an anesthetic, and dilates the bladder with air from an ordinary atomizer-bulb before opening it.

The fourth paper is by Dr. Joseph Wiener, entitled "Suprapubic Prostatectomy Without Ether or Chloroform." He is Dr. Lilienthal's associate at the Mount

Sinai Hospital and they have evidently been working together in complete accord. They both carry out the same technique of a rapid operation under laughing-gas.

A book which has done much to influence my views is the Surgical Anatomy of Joseph Maclise, published in 1851. As a surgical anatomy I have long regarded this

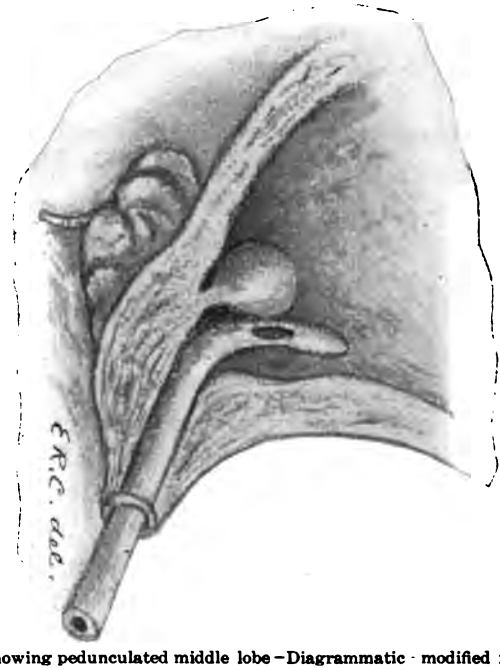


FIG. 1. Showing pedunculated middle lobe—Diagrammatic · modified from Maclise.

work as the very best. As bearing on the surgery of the bladder and urethra, and on the operation for stone, the author has drawn for us about forty of the most striking museum specimens of enlarged prostates to be found at the time in the museums of London and Paris. Of these forty about thirty-five would point to the suprapubic route as the shortest and easiest road to the complete

removal of the prostate. In a number of these cases the opening of the bladder from above would be absolutely necessary to fully meet other conditions of the bladder demanding surgical interference. I believe that a study of museum and postmortem specimens collected since then will tell the same story. Some of these figures of Maclise have been recently reproduced in the *Journal A. M. A.*, showing that others have been attracted by their significance.

Let me summarize briefly the conclusions I have drawn from these papers I have mentioned. I should say that the thirty-one Mount Sinai operations without a death may well compare with Young's seventy-five cases with four deaths. Even if we admit an equal mortality for the two operators, the suprapubic has the advantage in the after-results. Young admits quite a number with greatly impaired sexual power, and some cases where it has been lost. This danger is almost nil by the suprapubic route as the prostatic urethra and the seminal ducts escape injury. As a large number suffering from prostatic enlargement still enjoy sexual life, this point is of great importance in deciding upon the operative route. Young admits four cases of urethro-rectal fistula. The danger of injuring the rectum by the perineal route is generally recognized, a danger again practically nil by the suprapubic route.

Again, as Lilienthal points out, there are fewer nerves, fewer blood vessels, and less tissue generally cut by the suprapubic route. To the equally skilled operators the upper route is the shorter operation, and laughing-gas can be used more readily than by the lower route. As rapid work is especially necessary with the aged, who do well provided there is not much shock, this factor is of great weight.

As to the question of drainage, I believe the syphonage by the upper route is just as efficient as the lower route, perineal or urethral. In my two cases where I used the syphon and the retained catheter I noticed that the former sucked up the urine so quickly that little or nothing passed by catheter.

The perineal fistula closes sooner than the suprapubic. The Mount Sinai operators are experimenting along this line to devise a method of closing more quickly the suprapubic fistulæ. I believe that the suprapubic operation as at present done drains too long and that the wound can be closed sooner by a slight secondary operation. There was so little blood lost in my second case, and the bladder was in such good condition that I believe I could have closed at the time the suprapubic wound and drained entirely by catheter. When the suprapubic fistula has become small it only leaks when the bladder is fairly full, and this can be obviated by a more frequent passage of the urine. I fail to see how this factor should have made weight in the choice of the route. In the cases of encysted stone, or free large stone, or abscesses on the bladder wall, or where the middle lobe is only pedunculated, or where there are vegetations or other growths to be reckoned with, the upper route is the only one.

Lilienthal was the first to suggest the two-stage method in certain cases where it is advisable to treat the attending cystitis and build up the patient preparatory to the removal of the prostate. Here a preliminary cystotomy may turn the scales towards recovery and in addition give valuable information as to the real conditions present. As pointed out many years ago by Cruveilhier, the enlarged lobes of the prostate grow more towards the bladder than externally. Therefore, when attacked from above they are more in evidence, are ready exposed to

view, and require no preliminary separation from surrounding tissues before removal. Surely the dissecting finger has ample room from above. However, when the prostatic urethra is contracted by the small fibrous prostate, I believe the perineal route is the easier and the better. In these cases I consider it very doubtful whether a prostatectomy is called for at all. The indication is to dilate the prostatic urethra and this can be done by the perineum or from above by a cystotomy, using an instrument like a uterine dilator, which permits the use of considerable force.

As to the two routes, how does the profession stand today? While undoubtedly the majority are for the lower route, I believe that the upper route has steadily gained in favor and that ultimately it will be the selected operation in the majority of cases. Certainly it will not be long before the whole question will be definitely settled, and prostatectomy will have its route and its technique as definitely mapped out as hysterectomy, with which, from a pathological standpoint, it has much in common.

My own experience has been limited to three cases, which I will briefly describe, with the few thoughts which they have suggested. My first case was an old negro living on the outskirts of the city. He had been suffering several days from a bladder distended to the umbilicus, with a slight dribble of bloody urine. He had a bad pulse and was in a cold sweat. I could get no catheter in and passed a trocar above the pubis, filling a good-sized wash-basin full of bloody and ammoniacal urine. He declined to go into the hospital and sent for me again when his bladder had filled up to its original size. Again I drew off by trocar the same amount of urine. When he filled up again he entered the Georgia Infirmary and I went into the bladder from the perineum. I removed by finger

the right lobe of the prostate about the size of the left lateral lobe of the specimen I show you from my third case. Being able to pass easily my finger through the prostatic urethra, and the man's condition being so very

FIG. 11—Modified from Maclise—showing the appearance of the hypertrophied prostate projecting into the cavity of the bladder.

bad, I put in a catheter and packed the wound thoroughly with gauze. He died of shock in twelve hours. Had I this man to operate on again I should certainly go in from above, believing I should have less hemorrhage and less shock.

This case has suggested to me the thought of the advisability of removing in certain cases but one lobe of the two lateral lobes, provided the middle lobe is causing no obstruction. The removal of one lobe may quite free the caliber of the prostatic urethra, and the remaining lobe will be sufficient to keep the prostatic urethra in its original shape. The postmortem examination of cases where the complete operation has been done has shown that the prostatic urethra, having lost all its support, has widened out funnel shape and become a part of the bladder cavity, the points of the funnel reaching to the membranous urethra upon which the entire burden of the sphincter action of the bladder must depend. As in supravaginal hysterectomy, where we leave the cervix to hold the shape of the fornix vaginæ, so here we may leave the least obstructing lobe to hold the shape of the prostatic urethra. Operators seem to have taken it for granted that these three lobes should be removed in a routine way. This view of the case is well open to criticism. Even in my second case it was found necessary to remove but one lobe, the middle one, which was pedunculated and which rested on the urethral opening like a ball in its socket. The lateral lobes were not appreciably enlarged and offered no obstruction. The object of the operation is to relieve an obstruction and nothing more, and this may require the removal of one, two, or three lobes of the prostate. This is a question of judgment on the part of the surgeon. The three lobes or none does not seem to me good judgment.

My second case was an old gentleman of sixty-five who had had a cystitis for two years, and gradually getting worse with increasing fever and prostration. When I saw him he had been partly confined to his bed for six weeks with constant fever, with occasional exacerbations ushered in with severe chills. His urine looked like thin

country butter. He entered the Savannah Hospital and I introduced a permanent catheter in the hope of improving the cystitis and general infection. The value of the retained catheter has been chiefly shown us by the French surgeons who constantly employ this means of draining the bladder. I have used it a number of times and have found it of great value. It causes no irritation whatsoever, and I have thought that it was not only most efficient in draining the bladder, but in encouraging the amount of urine excreted; keeping the bladder empty seems to encourage the urinary flow. While the character of the urine in this case did improve very much, the patient's general condition did not improve, so I opened the bladder from above. I followed the Mount Sinai technique, dilating the bladder with air before opening it and using laughing-gas as an anesthetic. As I opened the bladder I opened a large encysted abscess, discharging about two ounces of pus. There was no projection of the lateral lobes into the bladder, and the prostatic urethra was not constricted, but I found a pedunculated middle lobe, which, like a ball in a socket, dropped into the urethral orifice and caused the obstruction. Its pedicle made it movable and permitted the passage of a catheter. This pedunculated lobe was easily peeled out and I show you the specimen with a drawing of a similar case copied from Maclise's Surgical Anatomy. The bladder wall from the long cystitis was half an inch thick. The removal of this small middle lobe was so insignificant that the operation may be regarded simply as a cystotomy. A syphon tube was introduced and the wound sewed up. In this case had I gone into the bladder from the perineum I should have missed the encysted abscess, and could not have removed the pedunculated middle lobe without some difficulty and traumatism of the prostatic urethra.

The patient showed no shock from the operation nor did he improve. The temperature gradually rose, the chills increased in frequency and he died on the fourteenth day. The case shows the danger of delay in these cases. An operation six months before would probably have saved him.

My third case is an interesting one. An old negro who gave his age as eighty years, was sent to me from Woodbine, Ga. He had been well and vigorous up to a week before, when he was suddenly taken with a stoppage of his urine. His physician, unable to pass a catheter, had used a trocar above the pubis. The bladder filled up again to the umbilicus and again the trocar was passed. The obstruction not being relieved, the man was sent to me. I saw him as soon as he reached the hospital. The bladder was up to the umbilicus and he was in great distress. I operated at once by the suprapubic route. On opening the bladder I found the three large lobes of the prostate bulging well up into it. I have tried to represent by a water-color sketch, modified from Maclise, the appearance of the hypertrophied lobes. An incision was made with scissors into the middle lobe, and the lobe was easily shelled out with the index finger. From the bottom of the cavity left I shelled out an equally large right lobe, and through the same single incision removed the smaller left lobe. With the latter I had more difficulty and used both my index and middle fingers. It is more torn up than the other lobes, though in one piece. I should call the operation, in this case at least, a simple one. It was quickly done. The hemorrhage was comparatively slight, certainly much less than what might be expected from such a cavity left. The bladder was otherwise perfectly healthy and free from cystitis. Evidently the man had long had these enlarged lobes of his prostate without any obstruction of the urine. The ob-

struction had to reach a certain point before the stoppage occurred, and once reached it was immediate and absolute. The specimens will show that no portion of the prostatic urethra has been removed. The three lobes weigh three ounces. Lilienthal has carefully examined for mucous membrane in the prostates he has removed, but has never found any, so that the danger of injuring the prostatic urethra by this route must be very slight. The same can not be said of the perineal route.

I put in a syphon drain and a permanent catheter. The patient, though his arteries were very atheromatous, took his chloroform well. There was no shock and practically no fever. Twice his temperature reached 100°. His pulse never was above 70°. The ease with which the prostate was removed surprised me. I required no counter pressure from the rectum. The blood left the urine in ten days. I removed the catheter on the eighteenth day, and he returned home on the twenty-fourth day with a slight leak still from the suprapubic fistula.

The interesting features in the case are: The long freedom from obstruction with a very large prostate, and the otherwise healthy bladder, so that we can judge of the operation itself and its effect in an absolutely uncomplicated case; the lack of reaction or any symptoms of shock; the complete control of his urine as soon as the catheter was removed on the eighteenth day. I ordered him to pass his water at first every two hours, and he informed me that he saw no difference in his micturition from his former healthy functioning. I believe in this case I could have left the left lobe and perhaps done better by my patient in helping the neck of the bladder hold its shape, and I shall certainly follow out this procedure should I get another opportunity to do the operation.

In these two cases I have noticed a very free flow through the syphon drain, rarely less than fifty ounces a

day, and often sixty or sixty-five ounces. Even with the catheter *a demeure* I have noticed a freer flow than ordinary. It has occurred to me that the opening of the bladder with the constant drain must have a strong diuretic action on the kidneys, and independently of any diabetic condition which may have been caused by the operation. Some sugar was found in my third case, but I can not say whether this was due to the operation or existed before. A cystotomy with drainage might tide a patient over a dangerous anuria occurring during an acute infection or in the course of acute or chronic nephritis. I give the suggestion for what it may be worth. I should be inclined to try the experiment in a desperate case.

I may state my conclusions briefly as follows:

The suprapublic route is preferable in the majority of cases; the operation is simpler, can be done more quickly, cuts fewer tissues, much less chance of injuring the rectum or prostatic urethra, and with it the sexual function; and this route is even better when the patient's condition demands two stages for the operation.

Finally, I believe the profession is gradually coming to view the suprapubic route as the better of the two in the majority of cases.

DISCUSSION ON DR. CORSON'S PAPER.

Dr. Jabez Jones: We have employed a method of getting to the prostate through the perineum by introducing a sound down to the prostate and then following this sound as a guide, cutting with a pair of blunt scissors, down to the prostate. By this means we do not have to bother with the anatomical relations and also prevents going into the rectum.

IRRITABLE AND HYPERTROPHIED SPHINCTER ANI—CAUSES AND TREATMENT.

BY J. L. FARMER, M.D., SAVANNAH.

A diseased or irritable and hypertrophied sphincter ani is not in many cases, if any, an original pathological condition, but an indication or symptom of some other pathological process which involves the nerve fibers of the muscle. This involvement of the nerve fiber is the true cause of the irritability, and in time hypertrophy, if the original disease is not eradicated. Irritable sphincter and hypertrophied sphincter are comparatively synonymous terms and differ only in the acuteness or chronicity of the process responsible for this condition. As in the first stages of some disease which induces the trouble you will find more or less irritable and tightly contracted sphincter with no hypertrophy, while in the more chronic cases you will often find a more thickened, hardened and contracted muscle with reflexes hardly noticeable. There is, of course, a subacute inflammation or irritability in these cases, or the muscle would return to its normal healthy state.

Examination of Sphincter Muscle—To determine the exact condition of the muscle, whether healthy or diseased, an examination of the parts is necessary in each and every case. Have the patient lay on left side, thighs flexed upon abdomen; then by placing the thumbs on either side of the anus and forcing the buttocks apart the muscle will easily relax, and the anal or mucocutaneous tissue brought into view if the muscle is healthy and patulous. If, on the other hand, the muscle is irritable

and contracted, it will be a hard matter to separate the edges of the anus or bring this tissue into view, as the tendency of the muscle is to contract rather than relax when handled or interfered with in any way when in an irritable and hypertrophied state.

Anoint the index finger of the right hand well with vaseline and place against the anus, and with steady pressure and a boring motion it can be readily introduced into the rectum in most instances, though introduction of the finger is very painful in some instances. If acute irritability exists you will find a tight cord-like muscle with no thickening of the fibers, with clonic or continuous contraction, causing more or less pain as you press the hand against the anus and attempt to sweep the finger round the rectal walls, and there will be a constant effort of the muscles to expel the finger. The same is true of the chronic or hypertrophied stage; exhibiting possibly less pain and a thickened, hard, and contracted muscle.

It must be remembered that the sphincters are much broader and heavier in some people than in others, and it is necessary to distinguish between a pathologically hypertrophied, and the broad healthy muscle. The healthy muscle is soft and patulous, rather dilating under examination with the finger in the rectum than contracting, and there is no special effort at expelling the finger after the first few moments.

External Sphincter Muscle—The external sphincter being one of the most important muscles of the body from its office of opening and closing the anus and preventing incontinence of the feces, and controlling to some extent peristaltic action of the bowels, it is important that we prevent, if possible, impairment or destruction of its functions by disease or from operations upon it and adjacent organs.

Diseases Causing Irritability and Hypertrophy of Sphincter—The diseases most prominent in causing irritability and hypertrophy of the sphincter are: Acute or chronic posterior urethritis, prostatitis, urethral stricture, cystitis, displacement of the uterus, external inflammatory or thrombotic hemorrhoids, internal hemorrhoids, anal fissures, acute prostitis, anal or rectal abscess, fistula in ano, and fissure in ano or irritable ulcer of the rectum.

I shall not attempt to give the etiology and pathology of these different diseases causing irritability and hypertrophy of the sphincter; as either of them fully considered, would make a sufficiently lengthy paper, will only go briefly into symptoms and treatment.

Urethritis, Prostatitis and Cystitis—Acute posterior urethritis, prostatitis and cystitis, either singly or collectively, will from the reflexes and extension of inflammation cause congestion, irritability and hypertrophy of the sphincter. The subacute and chronic stages of these diseases will also induce a corresponding condition of the sphincter. The irritation about the sphincter will be present in a corresponding ratio, to the extent of inflammation existing in these organs.

As these diseases are cured, so will the sphincter return to a normal state. For treatment of the above diseases I would refer you to works on genito-urinary diseases. In some instances stretching or divulsion of the sphincter may be necessary, and I wish to say here that there is no treatment which relieves so readily and positively in irritable sphincter, as a thorough divulsion correctly done. In the milder cases of irritable sphincter, gradual divulsion every second or third day, with a bivalve speculum, may be practiced to the comfort of the patient and relief of the muscle. For a moderate amount of rapid or gradual dilation without anesthesia local or general. I have found Bodenhamer's bivalve solid blade

speculum to be the best instrument for this purpose I have yet been able to obtain. I would advise against the use of a fenestrated speculum for rectal examination or treatment; as on withdrawing the crypts are liable to become engaged in the fenestra, the sacks torn, and ulcer or fissure result from abrasions and tears. The fenestrated speculum will always give more pain to the patient than the solid blade speculum, and we should avoid as much as possible painful examinations or treatments.

Urethral Stricture—Posterior perineal stricture of the urethra will also cause irritability of the sphincter, and should be relieved by gradual dilatation with sounds or operated on as the conditions present indicate.

External Hemorrhoids—External thrombotic and external inflammatory hemorrhoids will produce an irritable sphincter, which subsides on relief of the piles. In the thrombotic variety the tumor should be cocainized, a free incision made through the tissues covering the thrombus, and the clot removed; or complete excision of the tumor can be made if for any reason this is desirable. The inflammatory type may be treated by applications of cold or heat as the comfort of the patient may indicate, or by styptic and soothing applications, as lead and opium, ichthyol and morphine, or adrenaline solution, which should be applied on absorbent lint or cotton wool, and held in place with a T bandage. Should this type be complicated with thrombi, incisions should be made and the thrombi enucleated.

Divulsions of the sphincter in the inflammatory type often give the earliest and best results, by improving the circulation through the parts and reabsorption of the inflammatory exudation.

Acute Proctitis—A severe case of acute proctitis induces a very irritable, tightly contracted and painful sphincter. The symptoms in this disease are: A hot,

burning sensation in the rectum attendant with pain; a frequent desire to stool and the discharge of mucous, muco-purulent or bloody fluid mixed with feces, and a decided increase of pain with each attempt to stool.

Treatment—Saline laxatives in doses sufficiently large to wash out thoroughly the alimentary canal. The removal of hard fecal masses if found in the rectum. Irrigation with hot or cold water as you find most grateful to patient, through a return flow rectal irrigator or antiseptic return flow irrigations of boric acid 5 per cent., carbolic acid 1-2 to 1 per cent., or bichlor. sol. 1 to 20000. These injections may be given two or three times a day, and followed by an injection of one ounce of sweet oil containing ten grains of aristol, which I have found to be the most soothing application to the rectum in this disease of any that I have tried.

It is in some instances desirable and best to stretch the sphincters for the relief of pain in the rectum and contraction of the muscles, especially when the inflammation extends to the lower end of the rectum. This procedure gives relief from pain and prepares the patient for the irrigation described above, as you will often find that the attempt to pass any instrument through the sphincter is extremely painful, and in some instances almost unbearable. Divulsions in such cases are best done under a general anesthetic.

Internal Hemorrhoids—As internal hemorrhoids are not painful when well up in the rectum and at rest, they are, in my opinion, rarely if ever the cause of irritable sphincter unless complicated with some other trouble, as fissure or fistula. You will find that fissure very often complicates internal hemorrhoids, especially when they protrude at stool and have to be returned in the rectum, the sphincter in internal piles usually being relaxed instead of contracted. I have seen a few cases of very

small and congested internal piles with a highly congested condition of the hemorrhoidal area accompanied by an irritable sphincter relieved by stretching with a speculum two or three times, at weekly intervals. I am not sure that these cases were not complicated by small fissures on the internal margin of the external sphincter, and which I was unable to make out.

Anal and Rectal Abscesses—Abscesses of the anus or rectum will cause much pain and irritability of the sphincter, from attendant inflammation, while the process of pus formation is going on, and until the pus cavity is opened and emptied. As soon as an abscess is detected it should be opened with a free incision to insure discharge of the pus and good drainage thereafter. The cavity should be irrigated daily for the first few days with hydrogen dioxide or some other reliable antiseptic, and packed with sterilized gauze if packing is thought best. I rarely pack small cavities, but pack the larger ones until resolution and granulation is well under way. These abscesses should be opened at the very earliest moment to prevent them bursting internally and being transformed from abscesses into complete fistulae. Internal rectal abscesses that show no external inflammation or swelling can be detected by passing the finger in the rectum, when it can easily be felt as a smooth, hard or fluctuating mass. These should be opened and drained externally when possible by carrying a straight bistoury through the tissues above or outside of the sphincter until the pus cavity is reached and then making as free an opening as consistent for drainage. This operation will often save the patient the suffering and inconvenience of an internal incomplete fistula. Abscesses of the anus and rectum should not be confounded with fissure in ano and thereby neglected. In abscess there is an almost constant pain until the pus is discharged. In

fissure the pain will last from a half hour to several hours, when the patient is comparatively easy until the next stool, after which the pain returns, and will continue correspondingly with the day preceding.

Fistula in ano is often accountable for the worst forms of irritable and hypertrophied sphincter ani, though not exhibiting the most pain. In cases of long standing you will find a more indurated and hardened muscle than from any of the other diseases which cause this trouble. This is probably from the fact that necrosed tissue plays a part in the hypertrophy and people are prone to go longer with a non-painful fistula than almost any of the other diseases.

Treatment—There are several different methods given for the treatment and cure of fistula, such as operations, ligatures and injection with escharotics, etc. In my opinion, none of them equal the operation or excision. By passing a grooved director through the fistula you can cut through the tissue covering the fistulous canal and then drawing the knife through the base of the wound, cutting the necrosed tissue down to the healthy tissue in order to form a healthy base for granulation of the wound. In the second operation the pyogenic membrane is dissected out entirely and the wound closed with sutures. I prefer the open method for small fistula, but if you can succeed in getting union by first intention in the larger ones, you will shorten very much the time necessary for healing in the open method. These operations should be done under the strictest antiseptic technique in order to be successful.

Anal Fissures—Fissures of the anus, when they extend upward and involve the muco-cutaneous or anal tissue, cause irritability of the sphincter. These cases can be conveniently treated by the stretching with the speculum and cauterizing with a one to two per cent. solution

nitrate silver every third day and the application of pure ichthyol each day until healed. The application of a strong solution of cocaine before applying ichthyol will make the treatment painless, as the burning from the ichthyol spends itself in two or three minutes.

Fissure in Ano or Irritable Ulcer of Rectum—In my experience fissure in ano or irritable ulcer of the rectum is the most common cause of irritability and hypertrophy, and if not the most common cause of any of the other diseases, it is certainly the most painful. In fissure or irritable ulcer the pain begins with a stinging, burning sensation ten or fifteen minutes after stool and continues to grow worse for two or three hours, when the pain gradually subsides and reaches comparative ease at the end of four to six hours. In some instances they never entirely subside and irritability returns with full force after each movement of the bowels. I have seen in a few instances people almost in convulsions from an ulcer or fissure not larger than a grain of wheat, though well defined with a deep base. All ulcers of the rectum are not irritable or painful. If the ulcer is well above the external sphincter and does not involve any of its fibers, it would give but very little pain, though the internal sphincter should be included in the area. Though it seems that if the least fiber of the external muscle is involved the pain is never-failing after a movement of the bowels. In none of these cases can we promise the patient more certain and permanent relief, regardless of the amount of pain he is suffering, than in irritable ulcer, if he will consent to go under an anesthetic and have a thorough divulsion of the sphincter done.

In from three to five days the patient is ready to return to business without pain or inconvenience. In some cases where the muscle is not too hard and contracted, you can treat them successfully by every other day opening the

muscle to the bearable point with a speculum and painting the ulcers with a one per cent. nit. sil. sol., followed with ichthyol. If the ulcer should have an unhealthy base, scarifying with the bistoury is sufficient and excision is unnecessary. In many instances you will be able to diagnose the fissure by pulling the anus apart when the lower end of the ulcer can be seen running down into a lump or tag of skin. In the smaller and more internal ulcer you can only make them out by a digital examination. In many cases the ulcers are small and well up on the internal border of the external sphincter. I remember having once counted six ulcers at this point while divulsing the muscle. In this case palpation elicited an almost corrugated surface around the internal border of the sphincter.

Anesthesia and Divulsion of Sphincters—To do a divulsion of the sphincter ani, the patient should be thoroughly anesthetized before starting the operation, as there is no operation under which the patient will respond to the reflexes as quickly as that of divulsing the sphincter when irritable and hypertrophied from disease. The anesthetizer should also be careful not to let the patient inhale too freely of the chloroform with deep inspiration, which almost invariably comes with the beginning of the divulsion. I usually begin the divulsion with a small speculum, stretching the muscle slowly to the full extent of the speculum and then introducing two fingers of each hand and gradually stretch with a rubbing motion of the fingers until three fingers of each hand can be introduced in the rectum, when the same method is continued until I feel the muscle slightly give way. It should not be stretched beyond this point as there would be danger of tearing the fibers and permanent paralysis with incontinence of feces follow. Care should be used in stretching the sphincter of weak and debilitated people

and especially in cases of women; as the muscles of these people give way easily and the operation be overdone. However, in some cases you will find it is a hard matter to divulse sufficiently and will have to use about all the energy that you possess to do their divulsion. This is true mostly in cases of strong muscular people with broad and heavy sphincters.

As yet I have not reached the point that I think that divulsion should be practiced on every patient that I see; but I believe that in a good number of constipated cases divulsion would be the best treatment. I have had several cases in which medicine, diet and exercise only benefited until the last dose of medicine was taken, when divulsion became necessary on account of fissure or other disease; that after the patients were out following their vocations they have had regular daily evacuations of the bowels. Some of the operations were done as long as two to four years ago and I learned upon recent inquiry that they are still regular with their bowels. So I am thoroughly convinced that in many of these cases were we to turn our attention to the condition of the rectum and sphincters and practical divulsions where we find the conditions warrant the operation we would relieve many cases that we have otherwise failed to benefit. So when we have exhausted our list of drugs in some cases of chronic constipation, and water plentifully, vegetables, less meat, walking, massage, and horseback riding do no good, if we should then by accident examine the sphincters and rectum and find hypertrophy of the muscles from the presence of a small fistulous sinus or other disease, a thorough divulsion and cure of accompanying disease would likely relieve the constipated habit where medicine and medical gymnastics had been wholly inert.

DISCUSSION ON DR. J. L. FARMER'S PAPER.

Dr. Farmer: I wish to say that the general practitioners pay too little attention to the condition of the rectum and the conditions of the sphincter muscle. It is necessary in all these cases that a careful examination should be made. No matter what the patient says, as he calls everything that troubles the rectum the piles, whether it is cancer, fistula, hemorrhoids, etc., and if you give him a prescription on his own diagnosis without any examination you will not get much result. Therefore, the only thing to do is to make a thorough examination.

One point I wished to bring out was the importance of divulsion of the sphincter muscle. I have seen cases of severe constipation in which the bowels would move as long as medicine was taken, but would stop as soon as the medicine was left off. But after a thorough divulsion of the sphincter they have not had any trouble for three years.

REPORT OF OPERATIONS FOR MULTIPLE ABSCESS OF PELVIS WITH SLOUGH OF SIX INCHES OF COLON; SUBSEQUENT ANASTOMOSIS WITH CONNELL'S SUTURE; RECOVERY.

BY E. C. DAVIS, M.D., ATLANTA.

The proper handling of suppurating conditions is one of the most difficult of all surgical problems, and one which taxes the ingenuity and skill to the highest possible degree; when we add to this the liberation of numerous adhesions and devitalization of tissues to such an extent that sloughing ensues, we add materially to the difficulties of the problem and the dangers of the operative procedures. The case which I wish to report accentuates those difficulties markedly and possesses a peculiar interest from several standpoints.

Mrs. C— Multipara, about two years previous had a violent attack of pelvic peritonitis, which had recurred at frequent intervals, until her health was completely undermined and she had become a practical invalid. On examining her I found a retro-displaced uterus, lascerated cervix and a mass on both sides and behind the uterus. This mass extended high up and was very sensitive to the touch. The uterus was soft and boggy to the touch, with signs of chronic metritis. She was sent to the Tabernacle Infirmary and a specimen of the urine carefully examined, showing marked glycosuria. She was then put on a carefully regulated diet and at the expiration of twelve days the urine had become normal, and she insisted upon having the operation performed,

stating that she would assume all risk, as life in her present condition was not worth living.

After usual preparation the operation was performed September 8, 1906. A free incision was made in median line and the intestines carefully protected with gauze pads. A mass of adhesions was found and two extensive abscesses, the one on the right side taking the course of the ureter on this side and so firmly attached to parietal peritoneum that when dissected up the ureter was bared for a considerable distance. This was promptly covered over by suturing the torn peritoneum with catgut. On the left side a more difficult problem presented itself, for here the colon just above the sigmoid had become firmly agglutinated to the abscess on this side. On endeavoring to separate this the gut was denuded of a part of its peritoneum for a distance of about six inches. The uterus was friable and soft, appearing thoroughly septic and was removed. The patient was now becoming seriously shocked and the anesthetist began to urge haste, so while judgment dictated under ordinarily favorable conditions a resection of the gut at this time, was afraid she would succumb on the table, so sutured over the raw surfaces of the peritoneum, trusting that enough vascularity still remained to insure proper nourishment of the tissues; drainage was placed through vagina and also through abdominal incision, using gauze. Patient was put to bed in a very precarious condition and for five days pulse varied from inability to count it to 135 per minute. At expiration of fifth day gauze was removed, bowels had acted several times, though condition of patient was still but slightly improved. Stools became involuntary, patient slightly delirious. On the tenth day fecal fistula developed through vagina and the denuded portion of gut was cast off through vagina intact. After this patient began to improve, pulse coming down and getting

stronger. A very singular feature about this case was that nature endeavored to make an anastomosis, as after some days the stools passed through their normal route and we hoped for restoration without another operation. This was of but short duration, for stools soon ceased to pass through anus, and the vagina was constantly soiled by flow of fecal discharge.

Patient was too weak to undergo any additional operation now and was sent home to recuperate. She improved in general health rapidly and returned November 28th for the completion of the operation. The operation was performed two days after the admission, great care being given to preliminary preparation. Incision was again made in median line as in previous operation. Was much gratified to note the absence of adhesions at former operative site. We now endeavored to find the two ends of separated gut; found the one attached to vagina without difficulty and then passing finger behind and to left side found the other end of gut. These were brought together, sutured with Connell mattress suture, fortified with Cushing's continuous suture, using chromic catgut for first and plain catgut for second; the vaginal opening was closed except for small space through which was passed a strip of gauze and left in contact with sutured gut. The abdominal incision was closed.

The operation was very tedious and again patient was put to bed in a most critical condition. For five days pulse was often too weak to count; on fifth day a sterile olive oil enema was administered and several times afterward an ounce of castor oil given by mouth. This yielded no result, so she was given calomel regularly. She then became nauseated and vomited fecal matter, the rectum was irrigated, using Wale's metal bougie and she soon had action, some coming through vagina and some through rectum. The rectum was now regularly dilated

and kept clean, vagina was irrigated and after few days the fistulous margin touched with strong solution of nitrate of silver. She began to improve almost as soon as bowels acted and under this method of treatment vaginal fistula closed entirely and she is today apparently well, with bowels acting normally, having gained about thirty pounds. Urine has become normal.

This case illustrates several very interesting points, viz.:

1st. Is there any co-relation between chronic pelvic suppuration and glycosuria?

2d. Nature may cast off a large piece of intestine and recovery ensue.

3d. Nature endeavors to make an anastamosis, pointing out what we ought to do.

4th. The utilization of suture material in place of mechanical devices to approximate the ends of intestine.

Since this report was contemplated I have been privileged to resect the large and small intestines, using same suture with perfectly satisfactory results and no leakage.

DISCUSSION ON DR. E. C. DAVIS' PAPER.

Dr. Jabez Jones: I would like to ask the doctor what he thought was the cause of the sloughing? Was the mesentery of the gut destroyed? And if not, what was the cause of the death of the gut?

Dr. Waring: I would like to ask the doctor if he used protective gauze against the intestine as the ordinary gauze will itself cause trouble at the site of the anastomosis? But where it is protected with a rubber tissue this trouble will be avoided.

Dr. Kline: I think that the writer is to be congratulated upon his conservative work and upon saving the life of his patient. The present tendency is to do away with

mechanical substances in performing these anastomoses and this case demonstrates the success of this method.

Dr. Davis (in closing): In aswer to the first question I would state that the slough was ascribed to devitalization of the tissues. The abscess was so adherent that it interfered with the nourishment and this was responsible for the slough.

I believe in most instances that the protective gauze should be used, but I did not have it in this instance and therefore used only the plain gauze.

MATAS OPERATION—REPORT OF FOUR CASES.

BY CRAIG BARROW, M.D., SAVANNAH.

In reporting my four cases I will make no attempt to discuss the various steps leading up to this method of correcting aneurysm, as all know the idea and earliest execution of the procedure was the work of Dr. Randolph Matas, of New Orleans.

In the past three years I have operated upon four cases, successfully performing two reconstructive endoaneurismorrhaphies, one obliterative and failing in another. The last case was not a fair attempt, as the condition of the patient's limb was such that the case was hopeless. It was a large ruptured popliteal aneurysm with great passive congestion of distal leg and foot. The extremity was cold, showing no indication of collateral assistance. I did an obliterative operation. A few days later was compelled to amputate, as a gangrene had developed. The tibial and posterior tibial arteries were occluded to some little extent and in my opinion this condition existed prior to my operative attempt. This case is mentioned on account of the occlusion of the arteries following a ruptured aneurysm, for I am convinced that it was the prior interference in arterial circulation that caused this gangrene and not the operation.

Case No. 1. N. L., age sixty-eight, male. His past and family history gave no assistance. He had a large popliteal aneurysm of about six months' duration, with swelling and edema of distal leg. I operated in May, 1904, using the usual technique suggested by Doctor

Matas. In removing the fibrin from wall of aneurysm sack I carefully left a distinct strip in the bed of the current groove. I did this to prevent complete or partial obliteration. In sewing up I placed the small rubber catheter directly over this strip of fibrin and saw that my deepest sutures made their intra-saccular exit just at this border. By this method I obtained uninterrupted apposition of denuded sac. When I tied the first ties of sutures, I left the new channel permanently open; the other sutures were placed as described by Dr. Matas.

On the third day the edema had sufficiently disappeared to feel pulsation at the ankle. The subject was under my observation from May 28, 1904, the day of operation, until November 25, 1904. His leg regained its normal size and he could flex and extend the leg. During November, 1904, he returned to his former occupation and I did not see him again until August 2, 1905. The popliteal space was free from any signs of aneurysm, no pain and no pulsation, could flex leg almost to right angle to thigh. On November 27, 1905, he was still living and doing his work, but I failed to see him personally. Since then I have not been able to locate or obtain any information as to his condition.

Case No. 2. H. B., age twenty-seven, colored. Past and family history of no importance. Entered hospital May 1, 1906. He claimed that he received an injury to inner surface of right thigh while in the employ of the Central Railroad, about the 25th day of March, 1906. On examination I found a large fusiform aneurysm of the right femoral artery. I operated exactly as in case No. 1, but with much clearer results. In this case the sac measured from four and one-half (4 1-2) to five (5) inches from inlet to outlet. After closing the wound the Esmarch was removed. Dr. Train reported

perceptible pulsation at ankle within two minutes. Patient was put to bed. We then distinctly felt pulsation in the popliteal space. He remained in hospital until the 9th day of June, 1906. At this time eneurysmal symptoms were absent; no pain, no throbbing and no pulsation at old site, the leg and foot were normal and distinct pulsation in popliteal space and ankle. I saw him twice in summer with the same observation.

This man brought suit against the Central Railroad for damages. I was called as a witness and saw him in open court on the 4th of January, 1907. Dr. Elliott, the chief surgeon for the road, and I examined his leg, finding the wound and old site perfect and ordinary pulsation at ankle and behind the knee. He recovered no damages.

Case No. 3. C. L., age thirty-two, colored. He entered hospital on May 25th, 1906, with aneurysm of right femoral. I operated the following day, doing the obliterative intra-saccular process. The reestablishing of new canal could not have been done in this instance as the sac walls were too thin and diseased. The result was equally as satisfactory as in former two cases. In this instance I had the opportunity to observe the total absence of pulsation in popliteal space and at ankle. He left hospital on July 26, 1906, with perfect compensation, but no distal pulsation.

Case No. 4. This case was the attempt mentioned in the first part of this report and proved a failure. Yet I must say again that I am sure the gangrene was the result of the prior occlusion and not caused by the obliteration of the sac.

The reports of the surgeon performing the intra-saccular suture operation are convincing to the effect that this method is by far the most satisfactory in treating peripheral aneurysm. From my small success with the

reconstructive process I feel thoroughly justified in attempting the same in corporal aneurysms and will do so at my first opportunity. The first two cases of this report were mentioned by Dr. Matas in his recent extensive report of his summary of all cases reported to him.

DISCUSSION ON DR. CRAIG BARROW'S PAPER.

Dr. White: I am very sorry that I did not hear all of Dr. Barrow's paper, but I have been following his work along these lines with a great deal of interest. It is only a short time since Dr. Matas devised his operation for aneurysm and it is now looked upon as one of the great advancements in scientific surgery.

Dr. Barrow was one of the first to take up this work and I believe his list of cases is next to that of Dr. Matas. I have had some cases. The first one was that of a negro who had been stabbed just below Poupart's ligament and developed an aneurysm. Dr. Barrow was present at the operation. We found a very large sac with a very small opening into the artery. I sewed it up with three layers of chromacised catgut and got perfect results and two years later he was in good condition.

According to the rule of two that prevails in medicine, about three months later another case came in almost like the first. A boy was shot in the thigh just below Poupart's ligament and in about a month he had a swelling at this point. He was carried to Dr. Peacock, of Vidalia, to have the swelling lanced, but Dr. Peacock did not take that view of it and brought the boy to me for operation. We found a large sac with opening into the artery, which I sewed up according to Matas' method. In two weeks the boy went home with perfect results.

The value of an operation of this kind is great.

In these two cases, if they had been operated upon by the old methods, they would probably have lost their legs. If they had not been operated upon the aneurysms would have ruptured, resulting in death.

RUPTURE OF THE UTERUS, ESCAPE OF FETUS INTO ABDOMINAL CAVITY; OPERATION AND RECOVERY.

BY A. P. HANIE, M.D., HARTWELL.

In the early morning of November 22, 1902, I was hurriedly summoned to attend a case of labor, and as I had called several times previous to the patient on the same errand of expectancy and in each instance being disappointed, I turned over to take my morning "nap." Before I had finished, however, a second messenger came, assuring me that the woman was in labor and believed to be dying. Awakened by such an exclamation, I quickly dressed and hurried to the patient's home, which was but a few blocks away.

On entering the room I found the patient out of bed upon her knees on the floor and with each pain endeavored by great effort to perfect delivery.

I requested the attendants to replace her in bed and from her I obtained this bit of history: She was thirty-four years of age, four feet seven inches tall, little more than a dwarf. Otherwise she was physically normal, no visible deformity existing and her weight, when not pregnant, was ninety pounds. This was her fourth pregnancy. Two of the former were terminated between the sixth and seventh months and delivery was only possible after craniotomy had been resorted to, and the third pregnancy terminated at or near the eighth month and in order to save the mother embryotomy was performed. She knew she could not by normal labor be delivered of a living child, and so informed me. Coming events cast

their shadows before. So with these facts in mind I had the bowels as thoroughly emptied as possible and the vulva shaven, scrubbed and antiseptically prepared and covered with pads of gauze wet in a bichloride solution. In the meantime I assured myself of the normal condition of the patient's heart, lungs and kidneys. She was anesthetized and examination made. Inspection disclosed a curious state of affairs. The abdomen pouched outward, the fundus extending directly forward for some ten inches, the protrusion resembling an exaggerated umbilical or ventral hernia more than a pregnancy. Some idea can be obtained of the condition present when I state that the distance between the symphysis pubes and the ensiform appendix was but 6.2.

The abdominal and uterine walls were remarkably thin, so much so that the fetus could be easily felt and the extremities could be distinguished with ease, there being no trouble to tell foot from hand. Therefore error in diagnosis was impossible.

I prepared my hands for the vaginal examination very carefully and again gave the vagina a thorough douching and scrubbing with a long handled jeweler's brush, being very cautious not to injure the presentary parts while so doing. I found the cervix was only partially dilated and the membrane still intact. The presentation was normal and she had a contracted pelvis, whose conjugate diameter was less than three inches.

By this time the patient had regained consciousness, so I informed her and the family of my findings and advised her to remain in bed and to be perfectly quiet and to offer no assistance whatever to the pains, as delivery by them was utterly impossible, that labor had progressed as far as possible under the existing condition and that she had the alternative of two extreme measures—Caesarian section or embryotomy; the former offering life both

to mother and child, while the latter the child must be sacrificed.

I insisted that the family give me their decision without delay. She was now in great pain and we found it impossible to keep her quiet and in bed, and anyway, against my wishes and advice she would get up and when the next pain came on such an effort at delivery I had never witnessed. She taxed every muscle to its utmost and when the pain ceased she must have thought she was delivered for she asked to see the child. There was complete cessation of all pains and a change in the contour of the abdomen. The patient grew faint and lifeless, was nauseated and quickly developed a condition of profound shock. There was some hemorrhage from the vagina. I had her placed on the bed and prepared my hands as quickly as I could to make an examination. I found that the uterus had ruptured and through the anterior wall the fetus and membrane had escaped into the abdominal cavity. I cleared the uterus of all clots and gave her large doses of ergot and morphine and atropin subcutaneously.

The uterus contracted partially and controlled the bleeding to some extent. I secured assistance and decided to remove the fetus and membranes by an abdominal section.

DISCUSSION ON PAPER BY DR. HANIE.

Dr. Davis: I would like to congratulate the doctor upon the manner in which he conducted this case. Also I would like to call attention to the fact that too little attention is paid to measuring the pelvis prior to cases of delivery. The doctor recognized the condition and had the case well in hand and deserves credit for the way in which he handled it.

NEPHROPTOSIS.

BY R. R. KIME, M.D., ATLANTA.

The term nephroptosis should be applied to a kidney that has a range of movability beyond the normal, accompanied with symptoms due to its movability. For convenience in recording cases and in diagnosis the range of movability may be classed as first, second and third degree.

First, in which half or two-thirds of the kidney can be palpated; second, in which the whole of the kidney can be palpated and tip of fingers carried above the kidney; third, where the kidney is freely movable in the abdominal cavity. A movability of one-half inch, especially for the right kidney, is not abnormal. Byron Robinson states: "The right kidney is lower than the left in 85 per cent. of cases—movable right kidney is ten times more frequent than the left, and ten times more frequent in females than in males." He was able to palpate the kidney in 60 per cent. of women coming for treatment, but all did not have symptoms due to mobility. Longyear states: "There are fifteen cases of movable right kidney compared to the left." It is probable the proportion is even greater than that. He also states, "The presence of the nephrocolic ligament and the action of the ascending colon and cecum explains the difference in movability of the two kidneys. The weight of the colon and its action in expelling contents upward pulls down on the kidney on the right side by means of the nephrocolic ligament, the fibers of which spread out in the fatty capsule and coalesce to some extent in their attachment

to the colon." Movable kidney in general is due to the build of the patient, lax abdominal walls, tight-lacing, weakening of supports, loss of fat, falls, debilitating diseases, frequent pregnancies, heavy lifting and trauma. The liver and position of kidney on right side, with reason above given, make it more prone to displacement.

There is a class of slender neurotic patients, imperfectly developed physically, that are very prone to nephroptosis.

Such cases frequently have imperfect development of the pelvic organs and if these conditions continue until after middle age with debilitating influences, causing general relaxaton of the muscular and ligamentous tissues of the body with lax abdominal walls, then they are fit subjects for general splanchnoptosis. In many instances nephroptosis is accompanied with splanchnoptosis or other forms of ptosis, as well as pathological lesions of the abdominal and pelvic viscera.

In such cases operation for nephroptosis without correcting the other abnormal conditions will not relieve the patient. The physician must use discrimination and judgment, thoroughly examine each case for the various ptosia and pathological lesions of the abdominal viscera that may present especially diseased conditions of the appendix, gall, bladder and pelvic organs.

It is common in nephroptosis to have disturbance of action of colon involving the appendix, also digestive and nervous disturbances.

The ptosis of the kidney and colon pull down on the duodenum, which is practically fixed and thus obstructs the passage of food from stomach, resulting in stagnation and decomposition of the food, dilatation and displacement of the stomach that can not be relieved permanently until the cause is removed.

Of course the physician will recognize that dilatation of the stomach and gastroptosis are very often not associated with nephroptosis.

All cases of movable kidney do not require operative work. Where the mobility of the kidney is slight, say of the first degree, without disease of the kidney or special symptoms, indicative of perverted function, operation is not indicated. When the kidney is diseased and constitutional symptoms are present, due to the ptosis and perverted function of the kidney, then operation is indicated, whether the movability be of the first, second or third degree.

In many cases where the kidney is not specially diseased much good can be accomplished by abdominal supports, improving general condition of patient and regulating the action and functions of the alimentary canal, even where the kidney is movable in the second or third degree.

Where the kidney is diseased or function perverted by nephroptosis with nervous disturbances, indigestion, headaches, Dietl's crises, etc., operation is certainly indicated. So far I have not operated upon any cases except as above indicated.

I am inclined to believe most all cases of nephroptosis of the second and third degree, if watched long enough, will eventually show evidence of disease and perverted function of the kidney and develop constitutional symptoms. Kidney pads without abdominal support in such cases as a rule are an abomination, and frequently do more harm than good. The diagnosis of nephroptosis is easy to the trained hand, as a rule, yet tumors in the region of the stomach, especially the pylorus and gall bladder, must be differentiated and tumors of the kidney itself must not be forgotten. In deciding if the kidneys be diseased or functions perverted repeated examinations

of urine may be necessary and the use of the miscroscope positively essential.

A specimen over several hours should be collected as the urine passed on rising is least likely to show trouble. The operation is a matter of individual preference, as there are various modifications with and without dividing and utilizing the capsule proper.

Individually I feel more secure and prefer to partially decapsulate the kidney and utilize the capsule in giving support, especially when the kidney is diseased. It has been demonstrated that decapsulation will relieve congestion, hyperemia and some cases of inflammatory involvement of the kidney and capsule again reform. Unless it can be demonstrated that partial decapsulation does harm to a kidney, then good surgery would justify such a procedure, especially if the fixation of the kidney can be made more secure, more permanent, adhesions stronger and abnormal conditions relieved that nephropexia alone would not correct. If the partial decapsulation is properly done, the usual U-shaped anchoring stitches can be applied to the lower pole of the kidney and the nephrocolic ligament of Longyear included in stitching up the wound so as to secure the combined results of the three principal factors in anchoring the kidney, *i. e.*, the capsule, the U stitches and nephrocolic ligament.

In operating the incision in capsule should be made over Hyrtl's exsanguinated zone, i. e., commencing at the upper pole, about one-half inch posterior to median line of kidney on convex border; extend incision downward two-thirds the length of kidney, then across section one-half or three-fourths of an inch posteriorly and one inch anteriorly, or more elevating capsule to same extent, giving anterior and posterior flap for anchoring kidney. The flaps are folded on themselves so as to give a double thickness; for No. 2 or 3 plain catgut sutures, two to each flap.

The sutures are introduced somewhat diagonally; those in posterior flaps carried well back, high up in muscular structures, as close to rib as possible, but not tied until the two U-shaped sutures in the lower pole are introduced and tied, so as to elevate kidney and tilt the convex border posteriorly to the incision. (See cut.)

The sutures in anterior flap are so introduced as to draw the flap up against the muscle at inner border of the incision, but could not be shown in cut.

A strip of gauze is packed loosely under lower pole of kidney for drainage, to increase adhesions and obliterate subphrenic space, the gauze being removed in four or five days. The ends of the nephrocolic ligament are sutured in the wound in closing the incision or a loop of the ligament, if it has not been cut.

Plain catgut is used throughout the operation. Silkwormgut may be used for skin sutures if desired.

The knots of chromacized catgut set up irritation, favor suppuration and frequently give trouble.

The skin incision, separation of muscles and exposing kidney is done in manner best suited to the individual operator. I prefer to deliver the kidney with as little damage to the tissue and kidney structures as possible. After dividing Gerota's capsule, then by use of several forceps catching up fatty capsule, the kidney can be delivered usually without serious difficulty. It may be necessary to divide and clamp the nephrocolic ligament, thus facilitating delivery of kidney. The clamping of ligament facilitates its suturing later in the operation. Tenaculae hooked into the substance of the kidney produce trauma, which it is well to avoid if possible. In decapsulating it is well to avoid going too near the hylum of kidney for fear of producing a urinary fistula from pelvis of kidney. The patient is kept in bed three to four weeks and an abdominal belt is applied so as to give

support to all the abdominal organs and worn for several months. The abdominal supporter, reaching from pubes to near ensiform cartilege, I consider very important in the after-treatment of these cases, as it gives support to the abdominal viscera until patient can be built up again in flesh and the ligaments and supports regain their tone. The correction of other abnormal conditions at the same operation and in the after-treatment of most of these cases is essential if we desire to relieve the patient.

In that class of young women of the nephroptosis build often there is imperfect development of the pelvic organs, which must be corrected, not by mutilation of pelvic organs, which is next to criminal, but by conservation and development along rational therapeutic and physiological lines, doing only that amount of surgery that is essential to preserve the organs for future physiological functions. At one time last fall I had three such patients in my office for after-treatment and a fourth in the infirmary. All have had excellent results without mutilation of pelvic organs. One case of this class illustrated the beneficial results of decapsulation of the kidney.

Miss B., age twenty-four; nephroptosis of right kidney, second degree, small antiflexed uterus, extremely nervous, indigestion, menstrual periods irregular, at times granular and hyaline casts, small round epithelium in urine. Had a fall from a street-car some six months previous. Patient was sent to Tabernacle Infirmary for operation, but developed fever which continued for three or four weeks, followed with scanty urine, for days passing but two ounces; at one time went from Tuesday to Friday and passed but two ounces during the time, and yet there was no marked uremic symptoms—vomiting was persistent after fever subsided and urine scant. At times the mucous and bile vomited contained streaks of blood. There being no positive evidence of typhoid

fever or ulcer of stomach, operation was performed. Uterus dilated and curetted, kidney decapsulated and anchored in usual manner, kidney punctured in numerous places and gauze drain used. Urine increased within forty-eight hours and was soon passing six to eight ounces daily and is now practically well, except wearing a uterine drainage stem to stimulate development of uterus.

To illustrate the amount of work that can be done with safety on these patients when properly prepared, I report two cases operated upon lately at infirmary:

Case 2. Mrs. B., age twenty-eight; mother of two children, youngest seven months old; right kidney movable, third degree; indigestion, constipation, headaches, uterus retroverted, right ovary diseased, at times hyaline and granular casts in urine.

Operation—Uterus curetted, kidney decapsulated and anchored in usual manner, abdomen opened at outer border right rectus muscle, appendix removed, right ovary removed, ligament shortened, cyst in left ovary punctured. Patient recovered and regained health rapidly.

Case 3. Mrs. E., age twenty-six, nephroptosis build; mother of one child, sixteen months old; right kidney movable, third degree; pain in back, Dietl's crisis, headaches, specks passing before eyes, indigestion marked; had one attack appendicitis, weak, anemic; not been out of bed two months at a time since baby was born. At one time in bed three months at hospital for supposed ulcer of stomach; uterus retroverted; ovaries both enlarged, tender at times; granular and hyaline casts in urine; at frequent intervals intense headache and vomiting and not able to digest scarcely any food for days.

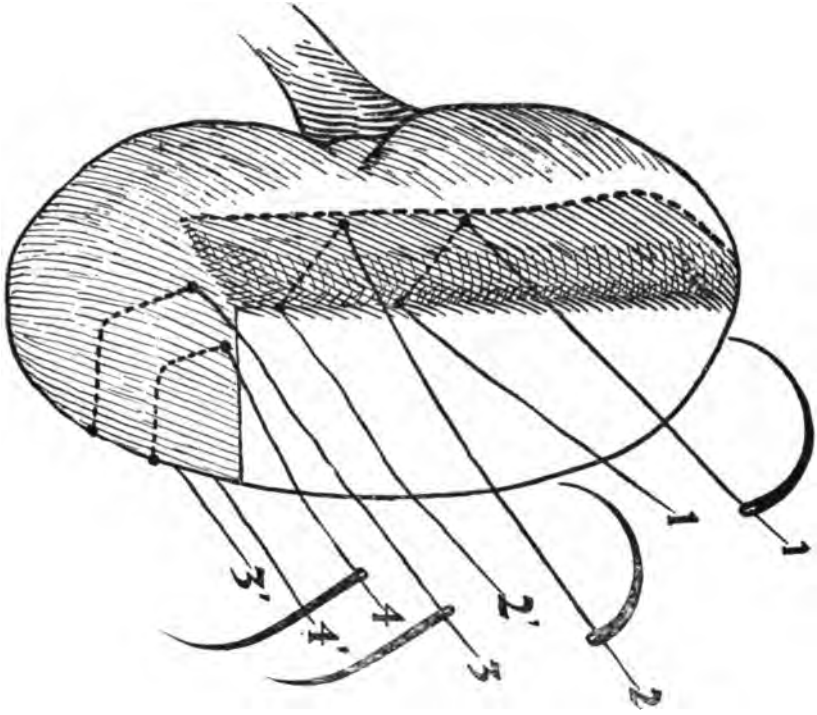
Operation—Kidney decapsulated and anchored, incision in abdomen at right rectus muscle, womb brought

forward, both ovaries resected and both round ligaments shortened, folded anterior on uterus and appendix removed. Now two months since operation. Patient up and about, wearing abdominal belt; appetite and digestion good and gaining health rapidly. I fit all cases with an abdominal belt reaching from pubes to near ensiform cartilege and instruct them to wear it constantly when up until it wears out. I exclude all diet likely to disturb the kidney, especially pork, beef, stimulants, tea and things fried in grease, and advise patient to live principally on milk, soft cooked eggs, light bread, corn bread, well cooked cereals, fruits, vegetables, a reasonable amount of oysters, chicken and fish, stewed, baked or broiled; cheese well masticated and plenty of butter, so as to build up patient, increase deposit of fat and give strength to muscles and supports.

I prefer the incision at border of right rectus muscle when opening abdomen in these cases, because all parts of the pelvis and abdomen can be reached from the one incision for any work that is necessary to be done.

The abdominal incision is closed with plain catgut and transversalis fascia by figure eight suture of black silkwormgut as used by Murphy.

If necessary and space is sufficient, the appendix and gall bladder may be reached from the lumbar incision made for the kidney, but such work is difficult and dangerous if there is much disease of the appendix, besides the abnormal condition of pelvic organs could not be corrected through such an incision. Following operation, leucocytes, kidney epithelium, hyaline and granular casts, perhaps blood, appear in urine, which usually clear up in from six weeks to two months unless the kidney is seriously diseased, then it requires a longer time.



Explanation to Figure—Stitches 1, then 2, are introduced well back, high up, next to twelfth rib, through quadratus lumborum and erector spinæ muscle, 1′ and 2′ are now threaded on needles and carried through muscles a half inch lower and the same distance nearer incision but not tied until the two U-shape stitches, 3 and 4, are introduced and tied.

Stitches 3 and 4 are now introduced back of incision, coming out through quadratus lumborum and erector spinae muscles about one inch below stitches 1 and 2, then the free ends, 3 and 4, are tied to 3′ and 4′, thus lifting kidney upward and tilting it backward to near its normal position in the body; now stitches 1 and 2 are tied and wound closed with No. 2 plain catgut, including portions of Gerota's capsule and nephrocolic liga-

ments, the strip of gauze being introduced beneath lower pole of the kidney at proper stage of operation so as not to carry stitches through it. Large, full curved round point needles are used except in U-stitches, and in the over-and-over skin stitch. I formerly used chromacized No. 2 for buried sutures and silkwormgut in skin, but had occasional suppuration from the chromacized gut. I am now using plain catgut, Nos. 2 and 3, with better results so far. Stitches 5 and 6 in anterior flap are not shown in cut; they are inserted and tied after stitches 1, 2, 3 and 4.

DISCUSSION ON PAPER BY DR. KIME.

Dr. Battey: I would like to ask the doctor if he has had many cases of appendicitis associated with prolapsed condition of the right kidney? I have operated for appendicitis and found this condition and therefore had to do two operations.

Dr. McRae: The subject of floating kidneys is one of the most interesting in abdominal surgery. I don't think that there are any of us who have not overlooked cases of floating kidney, and as Dr. Kime has brought out, it is often associated with other conditions in the abdomen and pelvis. The incomplete success of many of our operations on the tubes and ovaries has been due to the fact that we have not found and corrected a floating kidney.

I like to use the term floating kidney rather than moving kidney, as mentioned by Dr. Kime. The first and second degrees which he mentions are not surgical conditions, but if allowed to go on will become floating kidneys and give rise to nervous and digestive disturbances which can be corrected only by an operation. I think it is a great mistake to instruct a patient to use abdominal pads. I have not seen any one cured by them. I may not be as expert in fitting supports as my friend Dr. Hoke, but I do not think any one can do it.

I have had occasion to observe a number of cases that suffered more from pain after the operation than before and where some of the symptoms were increased. It was not because of the operation, but because they had not taken into consideration certain factors and certain technique. I refer to including in the stitches branches of the ilio-inguinal and ilio-hypergastric nerves. I like the muscle-splitting operation here, as I think there is very little necessity for cutting any important structures. I read a paper in Louisville in which I described an operation for this. It was a modification of the operation suggested by Mayo-Robson. I use the capsule for holding the kidney in position, suturing the nephrocolic ligament and then apply sutures through the posterior flap. The essentials are sufficient exposure and delivery of the kidney and then avoidance of the ilio-inguinal and ilio-hypergastric nerves in the incision.

I do not think that there is any question but that this trouble is often associated with chronic appendicitis. As to dealing with the appendix and the gall-bladder through a lumbar incision, I devised this operation but did only two operations, as I did not consider it a good procedure. It is much better surgery to make two incisions. I do not know of any surgeons now who advocate this operation.

Dr. G. R. White, Savannah: I met with a little accident a few days ago in doing an operation something similar to that described by Dr. Kime, and I want to mention it as a warning to others in a like condition.

This patient had floating kidneys with Dietl's crisis. The kidney would swell up during those attacks, then subside. I operated during the interval and found the kidney divided into globules. In attempting to decapsulate I opened into the dilated pelvis of the kidney, which

extended up one of the sulci to within an inch of the median line.

Dr. Kime (in closing): I am glad that Dr. McRae brought out the point of the incision and the inclusion of the nerve in the suturing. I usually make the incision below and parallel to the twelfth rib and cut as few structures as possible. If you do not watch this point you will have the neuralgic symptoms.

In regard to the trouble with the appendix, this is not uncommonly associated with this condition. This is due to a dropping down of the kidney prolapse of ascending colon and flexure, thus producing pressure on the cecum, causing a damming back of the feces into the appendix and the chronic trouble results. We should therefore always watch out for all these complications, if we want to be successful with all our cases.

A CASE OF SUPERFICIAL INGUINAL HERNIA.

BY EDWARD G. JONES, M.D., SAVANNAH.

Mr. ——, age twenty, unmarried, presented himself to me on account of a swelling in his left groin. He stated before examination that his testicles were not in the proper position. Upon examination quite a considerable enlargement was found on his left side, entirely above Poupart's ligament and reaching outward as far as the anterior superior spinous process. It evidently contained fluid as well as intestine. When he was made to assume the recumbent posture, the fluid gradually disappeared and the gut was reduced without difficulty. It was then easily apparent that his testicle was situated superficially, having passed through the inguinal canal and external ring, then upward and outward in front of the external oblique aponeurosis. The hernia had never been incarcerated or strangulated. It had given him little discomfort, but the swelling had lately begun to increase perceptibly in size.

On the right side the testicle occupied a similar position, but there was no enlargement other than that caused by the testicle itself.

Upon operating on the left side, a serous sac was discovered, communicating with the general peritoneal cavity and extending from the internal ring, through the inguinal canal, through the external ring and thence upward and outward as far as the anterior superior spinous process. Its vertical diameter in its superficial position was some four or five inches. It contained at the time of operatin peritoneal fluid, intestine and the testicle. This sac was

detached from its superficial position and split longitudinally as high as the internal ring in order to allow the exit of the cord. The remaining portion was tied off as in ordinary hernia operations. The testicle was about one-third the normal size. With the finger, an opening was made between the parietal peritoneum and the left rectum, just above the symphysis, and the testicle placed in the cavity so made. The wound was repaired as in a hernia operation, except that no account had to be taken of the spermatic cord.

On the right side, a similar serous sac was discovered in a corresponding superficial position. Though somewhat smaller than the sac on the left side, its cavity was still considerably larger than the cavity of the ordinary tunica vaginalis. It contained the testicle, likewise ill-developed. This sac had been obliterated above and consequently, in it there was neither a hydrocele nor a hernia. It was dissected away up to the point at which its walls had previously fused, and the testicle was placed in a position similar to the one on the other side.

The wound was repaired as on the left. The patient recovered without complications of any kind.

It appears, therefore, that the defect in this case was not what it usually is in cases of undescended testicle. It was not too short a cord or a closed external ring. The cord was amply long and the testicle had descended in actual distance as far from its original position near the kidney as is usual in normal cases. It had also brought down the customary peritoneal fold in a perfectly normal way to act as a tunica vaginalis. Preparatory to the descent of the testis there is a pouch-like bulging of the lower abdominal wall in either inguinal region. A shallow groove is thus formed which gradually becomes deeper and finally the two join in the mid-line to form the scrotum. Each of these pouches is normally

lined on the inner side of a sac prolonged from the transversalis fascia—the infundibuliform process. These pouches are empty and ready to receive the testicles. Evidently in this instance no such sac had been formed, or else its walls had become fused before the gland presented itself for entrance. I am unable to find out whether it was late in passing the external ring. The patient thinks it has been superficial ever since he can remember.

Neither before nor since the operation has this patient been in any way neurasthenic. He feels sexually competent, but has led a virtuous life. He has an occasional emission at night, but it is hardly probable that true semen is ejaculated. He knows no difference between himself and other men except the mere position of his testicles. His mind does not dwell on his condition morbidly. He is physically well developed in every other way. His mental endowments are in no respect below par.

Though his testicles had been located superficially for a long time, they have never been injured accidentally or otherwise. They were fixed extra-peritoneally at the time of operation on account of the reputed tendency of such ill-developed organs to undergo sarcomatous or other degeneration subsequently. It was thought best not to make an attempt to bring them into the scrotum, because there was so very little scrotum present and because, since the man was twenty years old, there was little likelihood of their physiologic development, my idea being that neurasthenic symptoms would be more likely to supervene if the undersized organs were placed in the scrotum, than if a comparison with the testicles of other men were made impossible.

This case seems of interest for the following reasons:

1. The hernia on the left side had passed out of the

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DISCUSSION ON PAPER BY DR. E. G. JONES.

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Dr. J. A. Crowther, Savannah: I want to commend the excellent judgment of the doctor in not attempting to bring the atrophied testicle down into the scrotum. He must have been strongly tempted to attempt this, when he found the cord sufficiently long to do it. The possibility of the effect upon the mind of the patient upon discovering its lack of being of normal size was, of course, to be considered.

Dr. E. G. Jones (in closing): I merely want to ask whether any one has seen such a hernia in front of the external oblique aponeurosis. As to whether this state of affairs is common, I am ignorant. It might accompany any undescended testicle, but it is strange so very little is said about it, if it does happen.

CASE OF ANTEPARTUM HEMORRHAGE DUE TO SEPARATION OF NORMALLY ATTACHED PLACENTA.

BY WHATLEY W. BATTEY, M.D., AUGUSTA.

With permission of Dr. J. E. Allen I report this case:

Mrs. C., 35—Married.

Family History—Negative.

Past History—Has had three children. No miscarriages. Labors easy.

Menstrual History—First menstruation at fourteenth years. Always regular; little pain.

Present History—During sixth month of present pregnancy patient had some edema of feet and headaches. Family physician was consulted in regard to early termination of pregnancy. A consultation was held. The decision was to try to carry her to time, at least to eight months.

Urinary Examination—Albumin, granular and hyaline casts.

Patient responded well to treatment.

During early part of eighth month patient was sent to hospital where she could be under constant observation.

On morning of twenty-fifth of January, 1907, Dr. Allen visited patient and found her doing very well. Three hours after visit patient had hemorrhage from uterus and seemed markedly shocked, the same increasing rapidly. The house surgeon packed vagina and cervix uteri, sending for Dr. Allen who could not be located. Dr. Battey, Sr., was 'phoned for, he being out I responded.

I found upon entering room a patient with deathly pal-

external ring and lay in front of the external oblique aponeurosis.

2. The tunica vaginalis had been brought down with the testicle on each side, and not being able to enter the scrotum, had attached itself to the locality indicated. That on the left had not been obliterated above.

3. It is rather uncommon for both testicles to remain undescended.

4. The defect was apparently in the scrotum itself. The cord was not too short nor could any fault be found with any of its coverings, unless it was the lack of prolongation of transversalis fascia.

DISCUSSION ON PAPER BY DR. E. G. JONES.

Dr. Kime: I was interested in the report of the case and the unusual conditions that Dr. Jones had to deal with. It reminds me of a case that I had several years ago. The testicle was on the right side and had become infected with gonorrhea. I removed the testicle and obliterated the hernia. The man is a hard worker and has had no return of the hernia since then. His wife died and he remarried again, but has had no children since then.

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On morning of twenty-fifth of January, 1907, Dr. Allen visited patient and found her doing very well. Three hours after visit patient had hemorrhage from uterus and seemed markedly shocked, the same increasing rapidly. The house surgeon packed vagina and cervix uteri, sending for Dr. Allen who could not be located. Dr. Battey, Sr., was 'phoned for, he being out I responded.

I found upon entering room a patient with deathly pal-

lor, pulseless and cold, air hunger, sighing respiration and thirst. The history of case was quickly obtained. The uterus was not symmetrical to palpation, soft with no tendency to contraction. The diagnosis of concealed hemorrhage was made and the question of immediate delivery appealed to me as being the only rational thing to do. But before doing so I decided to give her an intravenous infusion, so hurriedly opened up the median basilic vein. Dr. Wright, who heard commotion in the room, came in and arrived at the same diagnosis and suggested immediate delivery.

Just as soon as I could feel slightest response to infusion I began (without an anesthetic, of course) manual dilatation of cervix, which was quite soft, the external os admitting two fingers. I experienced little trouble in dilating, accomplishing it in five minutes. The head was the presenting part. It had not engaged. Taking pair of Boseman dressing forceps I ruptured membranes, following immediately with hand doing a podalic version.

With Dr. Wright's assistance body and head were quickly delivered, followed by blood clots. I immediately inserted hand into uterus and removed placenta, which was detached without difficulty, there being an antepartum detachment of a portion size of hand's breadth. The uterus contracted down well. The after-treatment was mainly stimulative and restorative. Patient made good recovery, though she has a slight nephritis.

In considering cause of antepartum hemorrhage, renal insufficiency is suggested as a most probable one.

A PLEA FOR CAREFUL SURGICAL TECHNIQUE

BY WHATLEY W. BATTEY, M.D., AUGUSTA.

The title of this paper is academical in a measure, but after searching literature for a careful solution of the problem of infections and accidents which are of such frequent occurrence in presumably careful surgical procedures, and having found the literature not only voluminous and exhaustive, without depicting briefly and explicitly the underlying factors which materially influence or retard wound-healing, leads me to enumerate in a brief way the factors that appealed to me so forcibly during my years of hospital experience.

We owe much to Lister for the principles that he has laid down relative to wound infection. Notwithstanding the fact that his ideas were in a measure erroneous, the atmosphere playing only a minor part in wound infection, his classical teaching to which is added the germ theory of disease, gives us the basic principles upon which all surgery should depend. This in our modern surgical technique receives the name of aseptic surgery. The term signifies the absence of living pathogenic bacteria, and in its practice it is our endeavor to remove all micro-organisms from everything in connection with the operation, so that we may have an aseptic wound. At best our asepsis is imperfect, but as the resisting power of the tissues will care for a limited number of micro-organisms, and when we keep the number entering a wound within that limit we have accomplished practical asepsis. Some surgeons practice antiseptic as well as aseptic surgery. In the former germs have supposedly

gained entrance into the tissues, and the effort is made to destroy them by chemical antiseptics, while in the latter it is our object to prevent their entrance. The use of chemical antiseptics can come to no good for the reason that if the living germs be destroyed the tissue's resistance is lowered by the direct effect of the chemical agents, and their dead bodies will act as foreign material, together with exfoliation of the cells from wound, thus interfering with proper union.

It is not my purpose to go into an exhaustive recital of the methods of sterilization and disinfection. Important as they are, and realizing that a single breach in any proper method will undo the asepsis of the operator and assistants, and convert an otherwise primary result into a bed of infection.

No one, professional or otherwise, wishes to attach blame upon himself for ill results when such blame can be thrust upon others who may be engaged in the same procedure. Many surgeons are sometimes apt to blame their assistants for poor results, and credit themselves with expertness, fitness and undeniable asepsis when good results accrue. But we all know that investigation has proven that many things can influence or retard first intention healing, thus obviating the possibility of attributing ill results directly to one, or a series of things. Assuming that the preliminary preparatory steps: preparation of operating-room, gowns, sheets, instruments, twenty-four hour preparation of patient, etc., have been carefully executed by a competent nurse, the surgeon and his assistants now deserve consideration. One important detail which is sometimes neglected is the proper cleaning of nails. The same should be neatly trimmed, and all collection of matter removed from under surface. The hands and arms, including the elbows, should be scrubbed briskly from above downward in running water for

fifteen minutes, not violently, for fear of injuring epidermis. It is wise to have a clock in operating-room so that the full time can be carried out,

The different solutions used for disinfection after scrubbing are many, and these depend upon the surgeon's preference. I believe Stewart's solution, which is a teaspoonful of commercial acetic acid and two teaspoonfuls of chloride of lime to quart of water to be an excellent one.

The proper preparation of operative site when patient is placed upon table should be considered briefly. If site has had twenty-four hour preparation it is hardly necessary to submit delicate skin to cleansing with brush, but the use of gauze with an ample supply of green soap will suffice. Following this the line of antiseptics is in order.

The care of the instrument-table deserves consideration. Instruments passed by assistant to operator should never be grasped by that portion which comes in contact with tissues. Catgut should not be drawn over palm in measuring length to be appropriated for surgeon's use. The little device of a German surgeon, which includes a ring with small spool attached upon which catgut is wound, the same being placed upon ring finger can be easily handled by surgeons, thus dispensing of handling by assistants. Any undue or unnecessary handling of instruments is positively dangerous, for we know that sterilization of hands is incomplete. The present method in vogue in some hospitals where the surgeon is his own instrument passer, is to be highly commended.

What can be more pleasing to a surgeon than a sharp scalpel. A dull one causes undue traumatism and thus militates against good results.

One important factor that I wish to emphasize is care in handling the tissues. We can not expect bruised tis-

sues to unite by first intention. The cells destroyed by traumatism, if not acted upon by phagocytic elements, must necessarily remain as foreign bodies, thus interfering with nature's agglutinating powers. The tissues so reduced in vitality must necessarily act as a culture media for bacteria, that would otherwise prove themselves harmless.

Extreme care should be exercised in preventing the spread of pus when pus cavities are opened. Thoroughly protect contigous structures by pads. Approach pus cavities with due caution, and make every attempt to satisfy oneself that condition is localized or not, before breaking up numerous adhesions, thus destroying nature's protective barrier.

Secure good drainage, and let this be from lowest point possible. In draining the cavity, for instance, in a diffuse peritonitis due to perforative appendicitis, the muscle-splitting procedure instead of the Deaver method (incision parallel with rectus, and pushing aside of same) is to be preferred, for the reason sutured part of the wound in the presence of infection, and much vomiting may be site of hernia, while in muscle-splitting operation the protrusion of intestine is improbable. On the other hand, drainage through muscle-splitting procedure is not so good.

The indiscriminate use of peroxide of hydrogen in a pus cavity is fraught with great danger. A barrier of friable adhesions which are protective to general cavity will not stand the gaseous distention, and thus we have pus disseminated, rendering the formation of multiple abscesses probable, or the production of a general infection, causing death. In this connection I recall the case of a little girl of twelve years, who was admitted to hospital, suffering from an attack of appendicitis. At time of operation pulse was 100 per minute, temperature 99⅕.

Slight rigidity at McBurney's point, and slight flexion of limb (right). Upon opening the abdomen (McBurney method) the appendix was located retro-cecal. The general cavity was well-protected with pads, and the appendix approached with care. It was imbedded in adhesions and found to be seat of an abscess. After having removed appendix the surgeon in charge decided to flush the site with peroxide of hydrogen. Drainage was inserted and abdomen partially closed. Patient left operating-room with pulse of 110. Four hours following operation patient had chill, temperature going up to 106, pulse 160, dying at 7 a. m., this being seven hours after operation. I can not account for death of child at this short interval if it were not due to the disseminated infection the condition being localized at time of operation, there being no sign of peritonitis other than local condition.

I can not emphasize too strongly the necessity of careful ligature tying. To avoid any possibility of slipping it is wise to put three knots in the procedure. When in haste, we sometimes unintentionally use the granny knot to the exclusion of surgeon's knot or wreath knot. In the granny knot stretching of the knot loosens it, while in the surgeon's knot it is only made more secure by stretching. Furthermore, one's ligatures should not be cut too near knot, for the softening of catgut by peritoneal fluids will cause slight shrinkage.

The peritoneum is very resistant, and will take care of much, but it is wise to flush out cavity thoroughly if there were much hemorrhage during our work, for when we are working in pelvis with patient in Trendelenberg posture blood will gravitate towards the diaphragm and there form clots, which may interfere materially with a smooth convalescence.

The necessity of controlling the slightest oozing can

be illustrated by a case in point. Mrs. R., aged thirty-five years, was operated upon at St. Mary's General Hospital, Borough, Brooklyn. Upon opening the cavity it was discovered that she had an intraligamentous cyst of left broad ligament. The broad ligament was separated and cyst dissected out. There was a slight oozing which had apparently ceased when rent in ligament was sutured up. Patient left table with pulse of 96, good volume, having been under anesthetic one hour. About eight o'clock at night, this being five hours after operation (patient had recovered from anesthetic) she began to show signs of shock or hemorrhage. The diagnosis of secondary shock was made by attending surgeon, though the possibility of hemorrhage was not eliminated absolutely. The advisability of opening abdomen was considered, but after considering the anatomy of site of operation, and the comparative dryness of the field when abdomen was closed, shock was decided upon as being the most probable condition, and she was placed upon large doses of adrenalin chloride, with a saline infusion, and with elevation of foot of bed. Owing to late occurrence of supposed condition of shock, and realizing that hemorrhage is a potent factor in the production of shock, I myself, advocated opening abdomen, but the expectant plan was followed out. To my astonishment the following morning the patient was better, and seemed to be gradually recovering. The diagnosis of secondary shock seemed conclusive. On the eighth day following operation patient had a chill, temperature going up into 103, pulse 130 per minute. Abdomen was soft but painful upon pressure in pelvic region. Vaginal examination revealed a bulging mass in Douglas's cul-de-sac. Under nitrous oxide cul-de-sac was opened, also post layer of broad ligament, and an amount of clotted blood was evacuated, thus establishing the diagnosis of hemorrhage. Her convalescence from this on was uneventful.

We sometimes find oozing from raw surfaces very annoying. This may be controlled by the application of hot pads, the use of adrenalin chloride applications 1 to 1000 solution, or occasionally by suture. Never leave raw surfaces, or dead spaces, if same can be closed over in any way.

When working in abdomen the hands should be cleansed in saline solution only, and not bichloride, or other antiseptic solution unless hands are again immersed in sterile water. Bichloride solution carried into cavity on hands will cause patient much unnecessary pain, owing to its irritant effect upon peritoneum.

The success of a surgical operation is enhanced by a good after-result. The possibility of hernia following certain operations should always be borne in mind.

Too much stress can not be laid upon careful closure of abdominal incisions. Notwithstanding extreme care our results are sometimes other than gratifying, but it can not be denied that care will often win the battle. One point which is sometimes neglected is replacement of omentum. This, it is true, may adhere to incision, but the effect produced is not as uncomfortable to patient as visceral adhesions. We sometimes experience in tense abdominal walls trouble in locating peritoneal edges, owing to its tendency to roll back. Such can be obviated by introducing finger, determining its velvety character, and rolling it outward, by which it is secured with clamps. Unless care is exercised the omentum may sometimes be included in running suture of peritoneum. This must be avoided.

In regard to suture material for wounds, I will say that every operator has his preference and individual method, but the success in securing primary union is due, in my mind, to the following factors: Absence of dead

spaces, little traumatism, nonuse of antiseptics in fresh wounds, absolute control of bleeding, proper apposition and care in the application of dressing.

In conclusion, I wish to thank you for your attention to this paper. My attempt has been merely to present the few surgical details which would appeal to one in his daily routine of operative work; the consideration of which may change the tide of infection into good results.

DISCUSSION OF DR. BATTEY'S PAPER.

Dr. McRae: This is one of the most important papers that we have had before this section, and Dr. Battey has brought out so many interesting points that I would like to discuss some of them.

Every man who has done much surgery has gained from his failures as well as from his successes if he has been judicious enough to blame himself and not some one else. There is a tendency among us to blame others rather than ourselves. We are sure that a nurse or some one else is responsible for some things, but we should remember that we are responsible for the operation because the patient submits himself to us and we are responsible for our assistants.

As to cleansing the hands, my skin is very tender. I wear beard in the winter because I have such a tender skin. My hands are without an abrasion because I have learned to take care of them. This is the most important thing that I have learned in twenty years of surgery. I can not stand to scrub them with a rough brush. I use gauze to scrub my hands and arms, and I can get them cleaner in this way because I can get more friction. The man who scrubs with a brush will strike the high places of the skin and jump over the low places, and his cleansing is not uniform. The way to do is to go over each

finger systematically, and you soon get into the habit of doing this.

As to the "twenty-four hour preparation," the Doctor did not say what he meant by the twenty-four hour preparation. If he meant local preparation I would say that I used to do a forty-eight hour preparation, but now I do the two-hour preparation. My attention was first called to this by Dr. Mayo. He said that he had noticed that the results after the rough work in emergency cases where he had to operate at once were better than in the cases in which the twenty-four hour preparation was employed. And I recall that the rough clinical work at the college was better than at the Grady Hospital. Therefore I have adopted the two-hour preparation.

Welch has shown that the staphylococcus epidermidis is in the deep layers of the skin, and begins to multiply when the skin is injured, and therefore severe scrubbing does more harm than good. I get better results than I did with the twenty-four hour preparation. I found that we more frequently over-prepare rather than under-prepare, and I do not want my patients prepared more than two hours before the operation.

In reference to the mouth: It has been shown that the meconium is sterile, and that the alimentary canal of a child becomes infected by taking in food. Cushing showed that you could keep it sterile by feeding sterile food, emptying the alimentary canal thoroughly and cleansing the mouth. We all see cases of Riggs's disease which result from uncleanliness of the mouth. I have the mouth of the patient thoroughly cleansed, as I think that ether pneumonia has been due more to the infectious material in the mouth than to the ether.

The muscle-splitting operation is a good one, and I hesitate about doing the lateral incision when this oper-

ation will do. In 1904 I began doing a little operation which has given me a great deal of comfort, and which my coworkers like very much. I have been watching the results since 1904, and have not seen any case of hernia following it.

I do not think that there is any procedure in abdominal surgery which should be condemned more heartily than the use of hydrogen peroxide.

As to ligatures, the principal point is to have proper material. If you have not good material in which you have confidence, you can not tie a knot with any satisfaction.

I never attempt a general flushing of the peritoneal cavity except when there is a general soiling of the cavity, as otherwise a local infection will become general.

It is almost inexcusable to have a post-operative hernia after a clean operation. It can be avoided by making small incisions with muscle-splitting operation and incisions that do not get a scar across the muscle fibers. As the Doctor has said, you should have accurate closure without any dead space.

Dr. Battey (in closing): I want to thank Dr. McRae for his favorable comment, and the many valuable points he has added.

As to the post-operative treatment, after abdominal preparations I frequently give my patients a little codeine. I do not care to give morphine, and I never give a cathartic until the second night following the operation, in order to prevent intestinal adhesions. I use the alum enema and it is usually successful and makes the patient comfortable. Sometimes I give this before giving the cathartic. I put the patient on semi-solid diet, and the next day on regular digestible food, after bowels move well.

SURGICAL ANESTHESIA—METHODS AND COMPLICATIONS.

BY J. M. SIGMAN, M.D., SAVANNAH.

The indifference so often shown by surgeons concerning anesthesia, the lack of attention accorded by patients before, during, and just after anesthetic has been given, seems to demand some consideration of this subject.

No patient should ever be anesthetized without thorough preparation, so far as the circumstances of the case will admit. This preparation means a thorough cleansing of the alimentary canal, complete rest for at least twenty-four hours before the anesthetic is given (longer if possible), and an examination of the products of the eliminative organs. In emergency cases it may be necessary to deviate from this rule, but with a stomach-pump, high colon irrigation and catheter, much can be done to insure comparative safety. An autointoxication can be easily induced by absorption of products from the intestines, and the danger almost certain to result from such a condition should be sufficient to make surgeons more careful.

An examination of the urine should be regarded, in every case, as a necessary routine feature; that the presence or absence of degenerative changes in the kidneys may be known. Every one will admit that this should be done, yet how often have we seen patients rushed to hospitals and an anesthetic given without any preparation whatever, and in some cases the patient doing badly afterwards, this condition could have been prevented had proper attention been given the patient.

Ether and chloroform seem to be the principal anes-

thetic agents in general use. Other combinations have been produced, tried and discarded. We have used the scopolamin-morphine ether sequence, and have followed this combination in some cases with chloroform. This method is too depressing, both to the circulation and the respiration to be given much consideration; there seems to be nothing gained by its use, but on the contrary, a great deal of anxiety incurred, both to the surgeon and to the family of the patient. This method will often require but very little ether, and but little chloroform, if any. Ether and chloroform have been given in combination, chloroform being given until surgical anesthesia is produced; then changing to ether.

We have also used the nitrous-oxide-ether sequence, and have found this to be a comparatively safe method. Chloroform, nitrous oxide alone and with chloroform, and chloroform and ether have all been used. At present, I prefer giving ether alone, by the drop or open method. As a second choice I would give nitrous oxide and ether, using Bennett's inhaler.

In the administration of an anesthetic, one should understand that he is giving his patient a poison which may result fatally at any time during its administration; also that danger is not passed until a week or ten days afterwards. Any drug capable of producing anesthesia will cause degenerative cellular changes in the internal organs producing a toxemia varying in severity, but in direct proportion to the strength of the drug, length of the anesthetic, and the presence or absence of predisposing causes, as sepsis, starvation, hemorrhage, chronic wasting diseases, and products of dead material, as a dead fetus or tumors which have become gangrenous. As a rule, however, any patient fit for operation can take ether properly given, but no anesthetic, for however trivial a cause is free from danger; in fact, statistics show that

there are more fatalities from anesthesia for minor operations than for major cases.

Chloroform has been shown to produce a train of symptoms occurring in or from, a few hours to eight or ten days after the operation, which has been difficult to explain. The clinical feature of chloroform anesthesia is depression, with shallow respiration, white blanched face and cold extremities. In any case requiring an anesthetic, there can be but one possible reason for giving chloroform, and that is an acute cold; if possible, this should be tided over until the cold becomes chronic, then ether can be administered. If given at all, it should be given by the drop method, allowing plenty of air, carefully watching the patient's pulse and general condition, and giving as little chloroform as possible. Chloroform has been shown to produce a form of delayed poisoning, known as acid intoxication, or delayed chloroform narcosis. This condition usually occurs in from a few hours to five or ten days after the anesthesia. This condition is inevitably fatal, and cases going to post-mortem have shown fatty degeneration of the liver with small neurotic areas more or less scattered, and degenerative changes in the kidneys, heart and venous congestion of the brain. In atrophic changes in the liver, chloroform is believed to be inevitably fatal. There are certain preliminary causes to this delayed narcosis, such as age (the younger the patient the more susceptible), sepsis and anemia. Two hours' chloroform anesthesia has been fatal to guinea-pigs and cats.

The clinical feature of ether anesthesia is stimulation, with a flushed face, accelerated breathing and warm extremities. As already mentioned, the only contraindication for ether is an acute cold, and it is best, if possible, to let the cold become chronic, then to give ether. No trouble need be feared from heart and kidney cases, or

lung troubles; they take ether well, when properly given. The best results may be obtained by giving ether by the drop or open method, and using the improved Esmarch chloroform inhaler, covered by two layers of stockinet, reinforced when necessary, by several layers of surgeon's gauze. Anesthesia can be induced in from four to ten minutes by this method, without excitement or struggling.

The anesthetist must be able to secure the confidence of his patient, and a great deal will depend upon his manner of approaching the patient. The effect of the anesthetic must be explained in a quiet, calm and reassuring manner.

An ordinary chloroform dropper can be placed in the ether can by a groove cut in the cork, placing a narrow strip of gauze in the groove, the strip of gauze being cut the size necessary to secure the drop desired. The inhaler should be first held about three inches from the face, and gradually lowered as the patient becomes accustomed to the ether, finally resting on the patient's face. A large drop of ether will be necessary at first to secure surgical anesthesia, changing then to a smaller drop. The patient's head should be elevated in such a manner as to secure perfect respiration, the jaw being held well forward. After the skin incision is made the amount of ether may be lessened, as it will not then require so much as before. The anesthetist should follow the operation, giving no more ether than is absolutely necessary in the individual case. No anesthetist should ever attempt to learn surgery at the same time, because if his patient is properly anesthetized he will have his hands full.

Alcoholics, drug-fiends, athletes and patients of an extremely nervous temperament will require morphine hypodermically before the anesthetic is begun; one-sixth or one-fourth of a grain given one half hour before the anesthetic, will be sufficient. Operations on the gall-bladder, stomach and otherwise, in close proximity to the

diaphragm, will also require morphine hyperdermically. Straining and groaning occasionally noticed in these patients during anesthesia, should cause no alarm, for usually it does not interfere with the surgeon.

Next to the ether drop method, nitrous oxide and ether will be found most useful, and anesthesia can be produced in from two to four minutes, allowing plenty of air after changing to ether. With this method, there will be no necessity for cyanosis or mucus in the throat, if the air-valves are kept open in the inhaler. However, no method of anesthesia can be considered safe that interferes with the patient's respiration. There can be no excuse for pouring ether in a closed inhaler every three or five minutes, then slapping this inhaler over the patient's face excluding the air. This will not give a smooth, easy anesthesia, nor is it free from danger.

It is much better to become proficient in preventing complications than in treating them. Tongue forceps, mouth gag, hyperdermics of strychnine and nitroglycerine and other stimulants convenient should always be insisted upon by the anesthetist. Swallowing the tongue, and occlusion of the epiglottis can be prevented by holding the jaw well forward and securing proper elevation of the head and neck. However, in patients having a double set of false teeth, the gums will cleave together, and although the chest will rise and fall, the patient will not get any air if the jaws are not held apart by a sponge or the fingers. This is one case where the treatment can be overdone.

If for any reason the anesthetist is not certain of his patient's condition, the anesthetic should be withdrawn at once; when the patient reacts slightly, as evidenced by swallowing and rolling the eyes, the anesthetic can be resumed. It is better to have the surgeon "cuss" a little than to have a dead patient. Never push any anesthetic

on a weak, irregular pulse. A patient should be so anesthetized that he will begin to react when sewing up the wound.

No patient should ever be allowed to leave the operating-table before being given a stimulant if there is the slightest indication for it. There are more fatalities from neglecting a weak heart the first few hours after an operation, than ever occur while the patient is under anesthesia.

A safe anesthetic is dangerous in incompetent hands; a dangerous anesthetic can be safely given by an experienced, competent man. More will depend, perhaps, in many cases, on the work of the anesthetist as regards the ultimate recovery of the patient, than on the surgeon. Nurses and under-graduates should not be entrusted with a general anesthetic; the anesthetist should be held accountable for the patient's condition while on the table, and to do this legally he must be a licensed physician.

In conclusion, all surgeons know that a good anesthetist is almost indispensable, yet there is no class of work given so little encouragement, and few men are willing to follow this line until they become proficient with the first requirements of a good anesthetist.

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DISCUSSION OF DR. SIGMAN'S PAPER.

Dr. McRae: This subject is so important that it would not be well to let the paper go by without discussion, especially in view of the excellent paper which Dr. Sigman has given us. I agree in the main with his position as to the operating surgeon. I feel that the anesthetist often has more responsibility than I have operating. I have been struck with the statement made in the Doctor's last remarks that skilled anesthetists are not encouraged. We think, sometimes, that it is a compliment to allow a young man to give the anesthetic, or give him a fee of five dollars. We are not going to get skilled men as long as we look upon this as a small part of the operation. I was talking to Mr. Mayo-Robson, and he said that anesthetists in London frequently get five guineas (which is equivalent to about $25.00 in our money), and that it is not unusual to get fifty guineas. When we have it known that we are not after the whole hog and allow the anesthetist to have his share of the fee we encourage the putting of anesthesias in the hands of a specialist. I don't think the anesthetic should be given for less than ten dollars, outside of an institution, and often it should be twenty dollars. When we begin to recognize this we will get better men as anesthetists.

I think anesthetics can be given very successfully by the rectum. In Boston, last year, I saw several cases in which it was administered in this way. In the Boston City Hospital they have been using it, especially in bone surgery.

I feel that it is not the best way, but there are cases in which it can be used to very great advantage. The specimens which were exhibited in the scientific exhibit yesterday were obtained from a case where I operated for two hours under ether anesthesia without vomiting or cough,

etc. Under no other method could I have done this. I mention this because it is successfully done, and has been of great comfort to me.

Dr. Cunningham: I will say that I had a case as Dr. McRae has mentioned, and I had a man to give the anesthetic who had given it under Dr. McRae's instruction. It is a fact that the blood will go into the larynx in certain operations, and therefore this method is the safer of the two.

Dr. Sigman (in closing): In regard to rectal anesthesia. I have seen what appeared to be a practical method, proposed as a substitute for the method advocated by Cunningham, of Boston, and just mentioned by Dr. McRae. This consists of a piece of glass tubing, Y-shaped, to which are attached two large size, soft rubber catheters. Free end of the tube is attached to glass funnel by a rubber tube. Catheters are passed through nares back into pharynx; cavity of mouth is packed off, to prevent inspiration, or swallowing blood. A piece of gauze or cotton is placed in funnel, ether dropped on this, proceeding as usual. I have never used this method, but excellent results are claimed for it, and I should use it preferably to rectal anesthesia.

The anesthetist is the poorest-paid man in connection with any surgical procedure. A fee of $5 to $10 is niggardly in comparison to the value of competent work, and the fee the surgeon usually receives. This is not as it should be. The anesthetizer deserves as much credit as the surgeon, and more in some cases, and yet he is employed by the surgeon, and never paid at all in many cases. I wish to thank the gentlemen very much for their discussion.

TRAUMATA OF THE KIDNEY.

BY W. B. CRAWFORD, M.D., SAVANNAH.

On account of the position of the kidney, injury to this organ is of relatively rare occurrence. In looking over the literature on this subject I find very little written, with the exception of an article by Kuster, in 1896.

Kuster tabulates a series of forty-three cases collected from literature up to that time of injury to the kidney subcutaneously. In considering this point I will first consider injury to the kidney subcutaneously; that is, without a so-called open wound. The causes of this:

First—Direct violence, such as blows and crushing.

Second—Indirect violence produced by severe muscular exertions, such as jumping or lifting, or blows over some other portion of the body, the force being transmitted to the kidneys, one or both. This latter form would, of course, in absence of hydronephrosis condition of the kidney, be impossible. It has been shown that a kidney outside of the body, with the pelvis undistended, can be dropped from a distance without rupture of its continuity; but that the same kidney with its pelvis distended by fluid, and dropped from the same height, will show lacerations, depending upon the height from which it is dropped.

It must be considered in viewing either direct or indirect violence as a causative element in the production of injury to the kidney, the fact of the practical impossibility of injuring this organ without seriously involving other structures. Therefore, in consideration of symptoms the

associated lesions must play a large part in the making up of symptom complex.

There are several conditions that may be found after an injury produced by either direct or indirect violence.

First—There may occur a hemorrhage into the fatty capsule, or into the parenchyma of the kidney substance without laceration of the kidney substance.

Second—There may be a laceration of the cortex of the kidney with considerable hemorrhage into the fatty capsule and retroperitoneal tissue without involvement of pelvis kidney. Neither of these two conditions would show presence of blood in the urine.

Third—The laceration of the cortex, with extension into the pelvis with infiltration into the fatty capsule with retroperitoneal collection of fluids containing urine and blood, or the laceration may be into the peritoneal cavity, urine and blood escaping into this cavity.

Fourth—There may be a crushing of the kidney sufficient to set up gangrene of this organ. With this condition there may not be any blood in the urine. This may be accounted for by the fact of the immediate stoppage of blood to the organ.

Fifth—There may be a rupture of blood-vessels or of blood-vessels and ureter.

Symptoms—The symptoms would depend upon the amount of damage produced. Shock is a prominent symptom in most kidney injuries, although, in some very severe lesions of kidney you will be surprised by their absence. If the shock is unaccompanied by marked hemorrhages it will in the course of a few hours gradually clear up, but if the patient continues in profound shock severe hemorrhages must be suspected. Of course, the shock is, as stated before, in a large measure dependent upon severity of associated lesions.

Hemorrhage—Hemorrhage varies like shock, and if marked, will soon appear in urine.

Pain—Varies with the individual, and does not depend upon the amount of kidney laceration, but upon the amount of tissue involved.

Temperature—This is at first subnormal, but with the disappearance of shock rises rapidly.

Pulse—Is at first that of shock, later owing to the hemorrhage may practically be absent.

Local Signs—First, ecchymosis over the region of kidney if blow is a direct one. Presence of swelling in lumbar region if subserous collection exists. Signs of peritonitis or fluid in the abdomen, depending upon time of examination if rupture of peritoneum occurs.

Hematuria—This may be absent if ureter is torn in half, or crushed, or injury so slight as not to involve the pelvis of kidney. It may be very slight in amount, and it may take time to appear if injury is slight, even if it involves pelvis and blood has time to coagulate; symptoms similar to the passage of callous may be present. These uretal clots are distinctive in character, resembling in shape a round worm. If hemorrhage is large it is usually well mixed with urine, bright red in color, and there is a continual desire on the part of the patient to urinate. If bladder happens to be empty at time of injury, large clots may be formed in this viscus. Under this condition very few drops of blood can be passed.

Differentiation Between Bladder Hemorrhage and Hemorrhage of the Kidney—First, systoscopy. This is by far the most valuable means of accurately determining source of hemorrhage, but inasmuch as very few of us are equipped with this instrument, its use may be passed over after mentioning it.

Second. The washing out of the bladder with solution

of boric acid and subsequently immediately repeating. Upon examination of the return solution, if same is found to be absolutely free from blood, it would preclude the possibility of bladder hemorrhage.

Third. The presence of worm-like clots would necessarily mean hemorrhage from above the bladder.

Prognosis—Causes of death in these cases, if not immediate, as result of shock or hemorrhage or injury to other important organs, will be due, first, to anuria, second, to infection, third, to secondary hemorrhage.

Anuria—This condition is probably due to a reflex contraction of vessels in sound kidney, due to stimulation of splanchnics and ends of vagi. This theory has for its source Professor Masius, who has proven by experiments on animals that section of vagis in neck with subsequent stimulation of peripheral ends has produced an absolute anuria.

Secondary Hemorrhage—This may not occur for a period of a week or ten days after injury, and it is then due to a disintegration of blood clots, said clots being acted upon by the urine.

Infection—First, this may be a local infection with a deep cellulitis, subsequent general involvement, or it may be due, secondly, to peritonitic condition due to presence of blood in the urine from peritoneal cavity; or, third, it may be an ascending involvement of opposite kidney, due to breaking down of blood clots in bladder. This latter condition should be obviated by the careful washing out and crushing of blood clots in the bladder; even in mild cases care should be taken to search for blood clots in bladder.

In general the mortality under the very best surgical procedures is about thirty per cent.

Treatment—If patient is in severe shock it is advisable to wait for a short time, but if he does not react or show

tendency to react and symptoms of hemorrhage are on the increase explore immediately. Even in the mildest cases where the diagnosis is absolute, do an exploratory operation. You lose nothing by your incision, but on the contrary you are put in possession of important facts.

The treatment of local conditions may be summed up by suturing lacerations if possible, cleansing out blood clots, drainage of peritoneal space or retroperitoneal space, as the case may be; tampons if lacerations too extensive for suture, and yet not sufficient to warrant removal of kidney. Nephrectomy, if damage so extensive as to preclude the possibility of repair, or if renal artery or vein require ligature. If necessary and conditions such as to demand a hasty operation it is advisable to leave on clamps for a period of four days, at the expiration of which time they may be removed with safety. In all of these conditions drainage is an essential feature. I would suggest in the use of drains that the gauze be separated from the surrounding tissue by the use of rubber dams.

Post-Operative Treatment—Stimulating and supporting, dressing on the second day, care should be taken in regard to the presence of possible blood clots in bladder. The bladder should be washed out and carefully examined every day until the danger from this source has been eliminated.

If anuria presents itself, an exploratory incision with decapsulation of sound kidney has been advised by Willie Meyer, of New York.

Injury to the Kidney Through an Open Wound—This is, as I have said before, a relatively rare occurrence, other than in times of war, only forty-three cases having been reported up to 1906. Gunshot wounds, stab wounds, penetration of splintered timber as a result of railroad accidents, are in the main chief causes of this

condition. The symptom would, of course, depend upon the nature of cause of injury. They may be in the main classified as in the preceding account. Of course, in an open wound involving the kidney the diagnosis is very much clearer than in subcutaneous rupture. The opportunity for treatment in gunshot wounds of kidney is, especially in military service, necessarily restricted on account of the variety of attendant conditions. In private practice this is an extremely rare condition to be met with. The indications for treatment would, of course, be an immediate exploratory operation, and an attempt to repair the damage. The same treatment is applicable also to a stab wound and penetrating wounds due to splinters.

It has been my fortune to have met with in Savannah three cases illustrative of, first, subcutaneous rupture; second, gunshot wound of the kidney (pistol wound); third, stab wound.

Report of First Case—W. McC., white. Irish, aged fifty-two years; married; stevedore; habits alcoholic. Past history: For the past three years prior to injury had complained of what he termed indigestion with a pressure of intermittent swelling on the left side. At time of injury was riding home on a bicycle, ran into a curbstone, was thrown, landing on the left side. He was able to get up, and although suffering considerable pain, walked a block and waited for a street-car, which he boarded and rode home. I saw the patient in consultation with Dr. Hawkins some six or eight hours after the accident. He was at that time suffering considerable pain in left side with a swelling in the left lumbar region. He had passed blood in small amount, but at frequent intervals. His temperature was subnormal, pulse 100, respiration shallow and rapid. On examination of bladder found presence of considerable urine and blood. This

was drawn, bladder washed out, and on placing hand on the lumbar region and pressing, tumor felt. We were able to empty about a half-pint of blood and urine into the bladder; this was then withdrawn by catheter. An operation was advised and fourteen hours after the accident the operation was performed. Posterior incision made, kidney explored. Found a rupture of a large hydronephrotic kidney. This was removed, tumor on removal measuring about one foot in length. This specimen is presented to-night.

Owing to the condition of the patient, and time of operation, it was necessary to leave on clamps on pedicle. These clamps were removed on the fourth day. Post-operative convalescence uneventful, with the exception of delirium which lasted four or five days, and then a mild dementia developed; this lasted for two weeks, and at the expiration of this time the brain cleared and has since remained so. Patient left hospital thirty days after operation. I have seen this case on numerous occasions since operation. He is apparently in perfect health. Urinary examination negative.

Report Second Case—Name unknown; negro; aged twenty-eight years; single; laborer; habits unknown; past history unknown. First seen by me in consultation with Dr. Weichselbaum at Georgia Infirmary. When first seen pulse 130, on operating table. Found a small, penetrating wound over right kidney, about a half inch below margin of rib and about four inches from spine. Exploratory incision, hemorrhage very profuse, obscuring site of operation. Kidney found to have been penetrated by ball, ball cutting through renal vein. Not being able to control hemorrhage by packing, clamps applied on pedicle, kidney excised. Ball found in wound. Patient's condition such that drainage and packing was all that

could be done. Wound left open. Patient died in twelve hours from shock and hemorrhage.

Report of Third Case—S. M. White, Carolinian; age fourteen years; habits negative. History—While at play was stabbed by a companion, the instrument used being a long-bladed pocket-knife. The boy was put on the train and brought to Savannah ten hours afterwards. On account of severe hemorrhage I explored the wound. Posterior incision made over kidney, showing stab wound one and one-half inches in length through cortex of kidney. Boy in profound shock on table. Tampon inserted down to incision. Wound packed. It was necessary to infuse him on table.

Post-operative treatment uneventful, urine appearing on dressing in the first twenty-four hours. This gradually diminished and on the seventh day was entirely absent. The boy improved steadily, wound closed with the exception of a small skin ulcer and on the twelfth day boy was sitting up in bed. At the solicitation of the family and on account of the sickness of another member of the family, that demanded the presence of the mother, I permitted the boy to return home on the fifteenth day. On returning home he was permitted to walk the distance of about an eighth of a mile, from the station to his residence. That evening, for the first time in ten days, blood appeared in the urine. The family physician was summoned, the boy put to bed and ice applied over the kidney. The amount of blood in urine, instead of diminishing, increased. The family became alarmed and six days after his leaving the hospital brought him back to Savannah. His condition on returning to the hospital was such that an immediate operation for removal of the kidney was decided upon.

On admission, temperature 102. Had had several chills during the preceding twenty-four hours. Urine

contained pus and blood. Pulse very rapid and feeble. Posterior incision again made and nephrectomy performed. Boy stood operation very well.

Post-Operative—There was a gradual diminution of urine voided. In the first twenty-four hours twelve ounces. This suppression increased and notwithstanding all efforts made a total anuria was established on the tenth day. The boy died on the eleventh day.

CONSTITUTION AND BY-LAWS

OF THE

Medical Association of Georgia.

CONSTITUTION.

ARTICLE I.—NAME OF THE ASSOCIATION.

The name and title of this organization shall be the Medical Association of Georgia.

ARTICLE II.—PURPOSES OF THE ASSOCIATION.

The purposes of this Association shall be to federate and bring into one compact organization the entire medical profession of the State of Georgia; to extend medical knowledge and advance medical science; to elevate the standard of medical education, and to secure the enactment and enforcement of just medical laws; to promote friendly intercourse among physicians; to guard and foster the material interests of its members and to protect them against imposition; and to enlighten and direct public opinion in regard to the great problems of State medicine, so that the profession shall become more capable and honorable within itself, and more useful to the public, in the prevention and cure of disease, and in prolonging and adding comfort to life.

ARTICLE III.—COMPONENT SOCIETIES.

Component Societies shall consist of those county medical societies which hold charters from this Association.

ARTICLE IV.—COMPOSITION OF THE ASSOCIATION.

SECTION 1. This Association shall consist of members and delegates.

SEC. 2. *Members.* The members of this Association shall be the members of the component county medical societies, to which only white physicians should be eligible.

SEC. 3. *Delegates.* Delegates shall be those members who are elected in accordance with this constitution and by-laws to represent their respective component societies in the House of Delegates of this Association.

ARTICLE V.—HOUSE OF DELEGATES.

The House of Delegates shall be the business body of the Association, and shall consist of (1) Delegates elected by the component county societies; (2) the Councilors, and (3) *ex officio,* the President and Secretary of this Association.

ARTICLE VI.—COUNCIL.

The Council shall consist of the Councilors, and the President and Secretary, *ex officio.* Besides its duties mentioned in the by-laws, it shall constitute the Finance Committee of the House of Delegates. Five Councilors shall constitute a quorum.

ARTICLE VII.—SECTIONS AND DISTRICT SOCIETIES.

The House of Delegates may provide for a division of the scientific work of the Association into appropriate sections, and for the organization of such Councilor District Societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component societies.

ARTICLE VIII.—SESSIONS AND MEETINGS.

The annual meetings shall take place on the third Wednesday in April, and at such place as shall be designated by the Association.

ARTICLE IX.—OFFICERS.

SECTION 1. The officers of this Association shall be a President, two Vice-Presidents, a Secretary-Treasurer and eleven councilors, one from each congressional district.

SEC. 2. The officers, except the Secretary-Treasurer and councilors, shall be elected annually. The terms of the councilors shall be for three years, those first elected serving one, two and three years, as may be arranged, viz.: the councilors for the first, second, third and fourth districts for three years; those for the fifth, sixth, seventh and eighth for two years; those for the ninth, tenth and eleventh for one year. The Secretary-Treasurer shall be elected for a term of five years. All these officers shall serve until their successors are elected and installed.

SEC. 3. The officers of this Association shall be elected by the Association by ballot, and without nomination, at 3 o'clock on the last day of the annual session, and no person shall be elected to any such office who is not in attendance on that annual session, and who has not been a member of the Association for the past two years. If there is no election on the first ballot, the three names receiving the highest number of ballots shall be voted on, the other names being dropped. If there is no election on second ballot, the two names receiving the highest number of ballots shall be voted on until election occurs. Delegates to the American Medical Association shall be elected at same time and in same manner.

ARTICLE X.—FUNDS AND EXPENSES.

Funds shall be raised by an equal per capita assessment on each component society. The amount of the assessment shall not exceed the sum of $3.00 per capita per annum. Funds may be appropriated by the House of Delegates to defray the expenses of the Association, for publications, and for such other purposes as will promote the welfare of the profession. All resolutions appropriating funds must be referred to the finance committee before action is taken thereon.

ARTICLE XI.—RATIFICATION.

The House of Delegates shall submit all questions before it to the Association for ratification.

ARTICLE XII.—THE SEAL.

The Association shall have a common seal, with power to break, change or renew the same at pleasure.

ARTICLE XIII.—AMENDMENTS.

Any amendment that may be offered to the constitution shall lie over until the next annual meeting; and for its adoption at such meeting shall require a two-thirds vote of all present and voting.

BY-LAWS.

CHAPTER I.—MEMBERSHIP.

SECTION 1. The name of a physician on the properly certified roster of members of a component society, which has paid its annual assessment, shall be *prima facie* evidence of membership in this Association.

SEC. 2. Any person who is under sentence of suspension or expulsion from a component society, or whose name has been dropped from its roll of members, shall not be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take part in any of its proceedings until he has been relieved of such disability.

SEC. 3. Each member in attendance at the annual session shall enter his name on the registration book, indicating the component society of which he is a member. When his right to membership has been verified by reference to the roster of his society, he shall receive a badge which shall be evidence of his right to all the privileges of membership at that session. No member shall take part in any of the proceedings of an annual session until he has complied with the provisions of this section.

CHAPTER II.—GENERAL MEETINGS.

SECTION 1. All registered members may attend and participate in the proceedings and discussions of the general meetings. The general meetings shall be presided over by the President, or by one of the Vice-Presidents.

CHAPTER III.—HOUSE OF DELEGATES.

SECTION 1. The House of Delegates shall meet at 2

p.m. on the day before that fixed as the first day of the annual session. It may adjourn from time to time as may be necessary to complete its business; provided, that its hours shall conflict as little as possible with the general meetings. The order of business shall be arranged as a separate section of the program.

SEC. 2. Each component county society shall be entitled to send to the House of Delegates each year one delegate for every fifty members, and one for each fraction thereof, but each component society which has made its annual report and paid its assessment as provided in this constitution and by-laws shall be entitled to one delegate. Should the regular delegate from any county not be present at the meeting, the President shall appoint a substitute from that county to act.

SEC. 3. Twenty delegates shall constitute a quorum.

SEC. 4. It shall, through its officers, council and otherwise, give diligent attention to and foster the scientific work and spirit of the Association, and shall constantly study and strive to make each annual session a stepping-stone to future ones of higher interest.

SEC. 5. It shall consider and advise as to the material interests of the profession, and of the public in those important matters wherein it is dependent on the profession, and shall use its influence to secure and enforce all proper medical and public-health legislation, and to diffuse popular information in relation thereto.

SEC. 6. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse among physicians of the

same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influence.

Sec. 7. It shall encourage post-graduate and research work, as well as home study, and shall endeavor to have the results utilized and intelligently discussed in the county societies.

Sec. 8. It shall divide the State into councilor districts, one for each congressional district, and, when the best interest of the Association and profession will be promoted thereby, organize in each a district medical society, and all members of component county societies and no others shall be members in such district societies.

Sec. 9. It shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates. Such committees shall report to the House of Delegates and may be present and participate in the debate thereon.

Chapter IV.—Duties of Officers.

Section 1. The President shall preside at all meetings of the Association and of the House of Delegates; shall appoint all committees not otherwise provided for, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit, by appointment, the various sections of the State and assist the councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. The Vice-Presidents shall assist the President in the discharge of his duties. In the event of the President's death, resignation, or removal, the Vice-Presidents, in their order, shall succeed him.

SEC. 3. The Secretary-Treasurer shall give bond in the sum of $1,000. He shall demand and receive all funds due the Association, together with the bequests and donations. He shall pay money out of the treasury only on a written order of the President.

SEC. 4. The Secretary-Treasurer shall attend the general meetings of the Association and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be *ex officio* secretary of the council. He shall be custodian of all record books and papers belonging to the Association. He shall provide for the registration of the members and delegates at the annual session. He shall, with the co-operation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society, and, on request, shall transmit a copy of this list to the American Medical Association. He shall aid the councilors in the organization and improvement of the county societies and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence, notifying members of meetings, officers of their election and committees of their appointment and duties. He shall employ such assistants as may be ordered by the House of Delegates with the approval of the Association, and shall make an annual report to the Association. He shall supply each component society with the necessary blanks for making their annual reports; shall keep an account with the component societies, charging against each society its assessment and collect the same. Acting with the committee on scientific work, he shall prepare and issue all programs. The amount of his salary shall be fixed by the Association.

Chapter V.—Council.

Section 1. The Council shall meet on the day preceding the annual session and daily during the session, and at such other times as necessity may require, subject to the approval of the President. It shall meet on the last day of the annual session of the Association to organize and outline work for the ensuing year. It shall elect a chairman and clerk, who, in the absence of the Secretary of the Association, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House of Delegates.

Sec. 2. Each councilor shall be organizer and peacemaker for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exist, for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his work, and of the condition of the profession of each county in his district at the annual session of the House of Delegates. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the House of Delegates on a proper itemized statement, but this shall not be construed to include his expense in attending the annual session of the Association.

Sec. 3. The council shall be the board of censors of the Association. It shall consider all questions involving the right and standing of members, whether in relation to other members, to the component societies, or to this Association. All questions of an ethical nature brought before the House of Delegates or the general meeting shall be referred to the council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or of a component society, on

which an appeal is taken from the decision of an individual councilor, and its decision in all such matters shall be final, when ratified by the Association.

SEC. 4. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies, to be suitably designated so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

SEC. 5. The council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Association. All money received by the council and its agents, resulting from the discharge of the duties assigned them, must be paid to the Secretary-Treasurer of the Association. As the finance committee it shall annually audit the accounts of the Secretary-Treasurer and other agents of this Association and present a statement of the same in its annual report to the House of Delegates, which report shall also specify the character and cost of all the publications of the Association during the year, and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary. In the event of a vacancy in the office of the Secretary-Treasurer, the council shall fill the vacancy until the next annual election.

CHAPTER VI.—COMMITTEES.

SECTION 1. The standing committees shall be as follows:

A Committee on Scientific Work.

A Committee on Public Policy and Legislation.

A Committee on Arrangements, and such other committees as may be necessary.

SEC. 2. The Committee on Scientific Work shall consist of three members, of which the Secretary-Treasurer shall be one, and shall determine the character and scope of the scientific proceedings of the Association for each session. Thirty days previous to each annual session it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented.

SEC. 3. The Committee on Public Policy and Legislation shall consist of three members and the President and Secretary. Under the direction of the House of Delegates it shall represent the Association in securing and enforcing legislation in the interest of public health and of scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, State and national affairs and elections.

SEC. 4. The Committee on Arrangements shall be appointed by the component society in which the annual session is to be held. It shall provide suitable accommodations for the meeting places of the Association and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary-Treasurer for publication in the program, and shall make additional announcements during the session as occasion may require.

CHAPTER VII.—COUNTY SOCIETIES.

SECTION 1. All county societies now in affiliation with this Association, or those which may hereafter be organized in this State, which have adopted principles of organization not in conflict with this constitution and by-

laws, shall, on application, receive a charter from and become a component part of this Association.

SEC. 2. As rapidly as can be done after the adoption of this constitution and by-laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

SEC. 3. Charters shall be issued only on approval of the council, and shall be signed by the President and Secretary of this Association. The Association shall have authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this constitution and by-laws.

SEC. 4. Only one component medical society shall be chartered in any county.

SEC. 5. Each county society shall judge of the qualification of its own members, but, as such societies are the only portals to this Association, every reputable and legally registered white physician who does not practice or claim to practice, nor lend his support to any exclusive system of medicine, shall be eligible to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

SEC. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the right to appeal to the council, and its decision shall be final, when ratified by the Association.

SEC. 7. In hearing appeals the council may admit oral or written evidence, as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a board and as individual councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

SEC. 8. When a member in good standing in a component society moves to another county in this State, his name, on request, shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

SEC. 9. A physician living on or near a county line may hold his membership in that county most convenient for him to attend, on permission of the component society in whose jurisdiction he resides.

SEC. 10. Each component society shall have general direction of the affairs of the profession in its county, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

SEC. 11. At some meeting in advance of the annual session of this Association, each county society shall elect a delegate or delegates to represent it in the House of Delegates of this Association, in the proportion of one delegate to each fifty members, or fraction thereof, and the secretary of the society shall send a list of such delegates to the Secretary of this Association at least ten days before the annual session.

SEC. 12. The secretary of each component society shall keep a roster of its members, and of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. In keeping such roster the secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county, and in making his annual report

he shall be certain to account for every physician who has lived in the county during the year.

SEC. 13. The secretary of each component society shall forward its assessment, together with its roster of officers and members, list of delegates, and list of non-affiliated physicians of the county, to the Secretary of this Association each year thirty days before the annual session.

SEC. 14. Any county society which fails to pay its assessment, or make the report required, on or before April 1 of each year, shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the Association, or of the House of Delegates until such requirement has been met.

CHAPTER VIII.—MISCELLANEOUS.

SECTION 1. No address or paper before the Association shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject, except by unanimous consent.

SEC. 2. All papers read before the Association, or any of the sections, shall become its property. Each paper shall be deposited with the secretary when read.

SEC. 3. The deliberations of this Association shall be governed by parliamentary usage as contained in Robert's Rules of Order, when not in conflict with this constitution and by-laws.

CHAPTER IX.

The present membership of the Association shall constitute the nucleus in their respective counties for the organization of county societies. They shall have a pre-

liminary organization and invite all reputable white physicians in their county to join them in forming a permanent organization. At the meeting for permanent organization they shall elect officers and adopt a constitution and by-laws, the same not to conflict with that of the State Association. Those counties not now having membership in the State Association may call a meeting of the regular white physicians, organize a society and secure a charter from the Secretary of the State Association.

Chapter X.—Amendments.

These by-laws may be amended at any annual session by a majority vote of the Association, after the amendment has laid on the table for one day.

ROLL OF MEMBERS

OF THE

MEDICAL ASSOCIATION OF GEORGIA.

BALDWIN COUNTY.

President, E. M. Green.....Milledgeville.
Secretary, T. M. Hall... .....Milledgeville.
Delegate 1907, J. P. Atkinson.

MEMBERS.

H. D. Allen .....Milledgeville.
J. P. Atkinson .....Milledgeville.
J. A. Callaway.. .. ..Milledgeville.
J. G. Croley .. ..Milledgeville.
W. A. Ellison .....Milledgeville.
E. M. Green .....Milledgeville.
T. M. Hall .....Milledgeville.
T. E. Hubert .....Meriwether.
R. V. Lamar .....Milledgeville.
G. A. Lawrence .....Milledgeville.
Y. A. Little .....Milledgeville.
L. P. Longino ....Milledgeville.
J. W. Mobley.....Milledgeville.
O. F. Moran .....Milledgeville.
T. B. Perry .....Milledgeville.
T. C. Powell .....Milledgeville.
R. C. Swint .....Milledgeville.
N. P. Walker .....Milledgeville.
J. M. Whitaker .....Milledgeville.

BANKS COUNTY.

President, W. P. Harden.....Commerce.
Secretary, J. D. Rice.....Homer.

MEMBERS.

M. P. Deadwyler .....Maysville.
W. P. Harden. .....Commerce.
V. D. Lockhart .....Maysville.
J. D. Rice .....Homer.
T. G. Underwood .....Maysville.

BARTOW COUNTY.

President, O. H. Buford.....Cartersville.
Secretary, T. Lowry .....Euharlee.
Delegate 1907, R. E. Adair.

MEMBERS.

R. E. Adair .....Taylorsville.
T. L. Arnold .....Kingston.
W. R. Barnett .....Folsom.
G. W. Battle .....Cassville.
R. I. Battle .....Cassville.
J. P. Bowdoin .....Adairsville.
O. H. Buford .....Cartersville.
A. T. Calhoun .....Cartersville.
C. M. Chamblee .....Adairsville.
W. C. Griffin .....Cartersville.
L. Johnson .....Cartersville.
T. Lowry .....Euharlee.
D. H. Monroe .....Emerson.
W. Redwine ....Cassville.
R. J. Trippe .....Cartersville.
F. V. Turk .....Stilesboro.
W. B. Vaughn .....Ferrobutte.
G. H. Warren .....Cartersville.

BERRIEN COUNTY.

President, R. C. Woodward.....Adel.
Secretary, F. P. Key .....Nashville.
Delegate 1907, P. H. Askew.

MEMBERS.

P. H. Askew .....Nashville.
L. A. Carter .....Nashville.
S. G. Ethridge .....Sparks.
F. P. Key .....Nashville.
L. B. Lovett .....Sparks.
W. P. Lovvorn .....Cecil.
W. A. Moore .....Alapaha.
G. A. Paulk .....Alapaha.
F. W. Schnauss .....Cecil.
R. C. Woodward .....Adel.

BIBB COUNTY.

President, Jas. T. Ross .....Macon.
Secretary, Jno. C. McAffee.....Macon.
Delegate 1907, J. H. Williams....Macon.

MEMBERS.

I. H. Adams .....Macon.
R. B. Barron .....Macon.
J. H. Bradley .....Macon.
L. I. Brown .....Macon.
A. M. Burt .....Macon.
R. T. Carswell .....Macon.
M. A. Clark .....Macon.
W. F. Carroll .....Macon.
J. W. Cowart .....Walden.
F. M. Cunningham .....Macon.
H. P. Derry .....Macon.

J. W. DuGuid .....Macon.
E. B. Elder .....Macon.
N. G. Gewinner .....Macon.
O. C. Gibson .....Macon.
G. P. Gostin .....Macon.
F. B. Gregory .....Macon.
T. H. Hall .....Macon.
C. C. Harrold .....Macon.
E. D. Hope .....Macon.
H. L. Howard .....Macon, R. F. D. 1.
Max Jackson .....Macon.
F. C. Johnston .....Walden.
W. G. Lee .....Macon.
W. J. Little .....Macon.
Mary E. McKay .....Macon.
J. C. McAfee .....Macon.
H. McHatton .....Macon.
K. P. Moore .....Macon.
J. M. Moore .....Macon.
J. P. Newman .....Macon.
S. P. Ousley .....Macon.
S. B. Palmer .....Macon.
C. H. Peete .....Macon.
W. C. Pumpelly .....Macon.
Herbert Respess .....Macon.
G. W. Roberson. .....Macon.
J. T. Ross .....Macon.
W. P. Rushin .....Macon.
J. A. Selden .....Macon.
J. H. Shorter .....Macon.
M. M. Stapler .....Macon.
J. S. Sullivan .....Macon.
O. H. Weaver .....Macon.
F. L. Webb .....Macon.
W. H. Whipple .....Macon.

H. J. Williams .....Macon.
J. E. Wright .....Macon.

BULLOCH COUNTY.

President, R. L. Sample.....Statesboro.
Secretary, R. L. Cone.....Groveland, R. F. D. 1.

MEMBERS.

R. L. Cone .....Groveland, R. F. D.
M. M. Lively .....Statesboro.
D. E. McEachern .....Statesboro.
A. J. Mooney .....Statesboro.
C. E. Stapleton .....Brooklet.
R. L. Sample .....Statesboro.
A. Temple .....Statesboro.
H. K. Thayer.....Brooklet.
W. D. Woods .....Metter, R. F. D.

BURKE COUNTY.

President, E. A. Harris.....Midville.
Secretary, J. M. Byne .....Waynesboro.

MEMBERS.

J. M. Byne .....Waynesboro.
C. H. Cox .....Waynesboro.
E. A. Harris .....Midville.
H. B. McMaster .....Waynesboro.
C. T. Milner .....Waynesboro.
J. P. Timmerman .....McBean Depot.
A. M. Torbitt .....Gough.

BUTTS COUNTY.

President, A. F. White .....Flovilla.
Secretary, H. W. Copeland.....Jackson.
Delegate 1907, J. L. Byron.....Jackson.

MEMBERS.

B. F. Aiken ..... Jenkinsberg.
C. A. Butner ..... Jackson.
J. L. Byron ..... Jackson.
H. W. Copeland .. .. Jackson.
J. E. Hanna ..... Jackson.
J. W. Harper ..... Jackson, R. F. D.
J. A. Jarrell ..... Jackson, R. F. D.
W. J. Smith ..... Juliette.
W. H. Steele ..... Jackson.
J. M. Thaxton ..... Jackson.
W. J. Waits ..... Flovilla.
B. F. Watkins ..... Jackson, R. F. D.
O. C. Webb ..... Jenkinsburg.
A. F. White ..... Flovilla.

BRYAN COUNTY.

MEMBERS.

C. H. Meldrim ..... Belfast.

CARROLL COUNTY.

President, J. C. Smith..... Sand Hill.
Secretary, J. F. Cole..... Carrollton.
Delegate, 1907, J. C. Smith.

MEMBERS.

F. E. Andrews ..... Clem.
C. L. Baskin ..... Temple.
H. Boatright ..... Carrollton.
F. M. Brock ..... Tyus.
J. C. Brock ..... Carrollton.
G. W. Burnett ..... Whitesburg.
J. B. Camp ..... Carrollton.
J. R. M. Carter..... Carrollton.

J. F. Cole ..... Carrollton.
B. L. Embry ..... Villa Rica.
W. L. Fitts ..... Carrollton.
W. W. Fitts ..... Carrollton.
H. J. Goodwin ..... Roopville.
J. C. Griffies ..... Burwell.
M. M. Hallum ..... Carrollton.
J. D. Hamrick ..... Carrollton.
J. A. Hutson ..... Bremen.
R. L. King ..... Hulett.
J. L. Lovvorn ..... Bowden.
W. H. Malone ..... Mt. Zion.
H. R. Marchman ..... Villa Rica.
J. A. Martin ..... Mt Zion.
B. R. Moore ..... Temple.
B. C. Powell ..... Villa Rica.
D. S. Reese ..... Lowell.
J. A. Reeves ..... Whitesburg.
O. W. Roberts ..... Hulett.
T. E. Rogers ..... Barge.
J. R. Sewell ..... Carrollton.
J. C. Smith ..... Sand Hill.
T. M. Sprewell ..... Temple.
L. E. Wilson ..... Bowden.

CHATHAM COUNTY.

President, Thos. J. Charlton ..... Savannah.
Secretary, J. M. Sigman ..... Savannah.
Delegates 1907, G. R. White ..... Savannah.
T. P. Waring ..... Savannah.

MEMBERS.

H. P. Adams ..... Savannah.
W. H Adams ..... Savannah.
A. L. R. Avant ..... Savannah.

Jas. O. Baker ..... Savannah.
Craig Barrow ..... Savannah.
G. O. Brinkley ..... Savannah.
W. F. Brunner ..... Savannah.
J. N. Carter ..... Savannah.
Thomas J. Charlton ..... Savannah.
J. F. Chisholm ..... Savannah.
T. S. Clay ..... Savannah.
Martin Cooley ..... Savannah.
E. R. Corson ..... Savannah.
M. X. Corbin ..... Savannah.
W. B. Crawford ..... Savannah.
J. A. Crowther ..... Savannah.
P. S. Clark,..... Darien.
W. R. Dancy ..... Savannah.
J. W. Daniel ..... Savannah.
M. F. Dunn ..... Savannah.
J. L. Farmer ..... Savannah.
St. J. B. Graham..... Savannah.
H. W. Hesse ..... Savannah.
J. Lawton Hiers ..... Savannah.
J. S. Howkins ..... Savannah.
J. L. Jackson ..... Savannah.
J. G. Jarrell ..... Savannah.
G. H. Johnson ..... Savannah.
Jabez Jones ..... Savannah.
R. S. Kenan ..... Savannah.
Ralston Lattimore ..... Savannah.
L. Lee ..... Savannah.
W. W. Lee..... Savannah.
H. H. Martin ..... Savannah.
Robt. V. Martin ..... Savannah.
H. H. McGee..... Savannah.
A. A. Morrison ..... Savannah.
G. M. Norton ..... Savannah.

W. A. Norton ..... Savannah.
W. E. Norton ..... Savannah.
B. P. Oliveros ..... Savannah.
W. B. O'Rear ..... Savannah.
W. W. Owens ..... Savannah.
B. S. Purse ..... Savannah.
R. S. Reid ..... Savannah.
J. T. Rogers ..... Savannah.
M. M. Saliba ..... Savannah.
Jno. M. Sigman ..... Savannah.
Chas. Silverman ..... Savannah.
A. B. Simmons ..... Savannah.
W. W. Smith ..... Clio.
H. B. Stanley ..... Savannah.
J. A. Stothart ..... Savannah.
W. L. Stothart ..... Savannah.
J. O. Strickland ..... Pembroke.
M. R. Thomas ..... Savannah.
R. M. Thomson ..... Savannah.
J. K. Train ..... Savannah.
T. P. Waring ..... Savannah.
Frederick Wahl ..... Savannah.
Geo. R. White ..... Savannah.
J. Weichelbaum ..... Savannah.
W. S. Wilson ..... Savannah.
A. W. Winders ..... Savannah.

CHEROKEE COUNTY.

President, J. M. Turk ..... Canton.
Secretary, J. M. Bates ..... Canton.

MEMBERS.

J. M. Bates ..... Canton.
G. D. Blackwell ..... Canton.
J. R. Boring ..... Woodstock.

N. J. Coker ..... Woodstock, R. F. D.
Jas. Mayhugh ..... Sutallee.
W. H. Perkinson ..... Woodstock.
J. M. Turk ..... Canton.
J. P. Turk ..... Nelson.
R. M. Moore ..... Waleska.

CLARKE COUNTY.

President, I. H. Goss..... Athens.
Vice-Pres., H. M. Fullilove..... Athens.
Secretary, J. P. Proctor..... Athens.
Delegate, 1907, I. H. Goss.

MEMBERS.

S. C. Benedict ..... Athens.
J. C. Bloomfield ..... Athens.
W. A. Carlton ..... Athens.
W. D. Carter ..... Winterville.
W. B. Conway ..... Athens.
F. W. Coile ..... Winterville.
C. C. Echols ..... Whitehall.
I. H. Goss ..... Athens.
H. M. Fullilove ..... Athens.
A. C. Holliday ..... Athens.
J C. McKinney ..... Athens.
J. P. Proctor ..... Athens.
S. S. Smith ..... Athens.

CLAY COUNTY.

Secretary, R. T. Crozier..... Fort Gaines.
Delegate 1907, C. P. Holmes.

MEMBERS.

R. T. Crozier ..... Fort Gaines.
C. P. Holmes ..... Fort Gaines.

H. R. Ingraham .....Fort Gaines.
J. T. Mandeville .....Fort Gaines.
W. J. Tatum .....Fort Gaines.
W. C. Wimberly .....Fort Gaines.

COBB COUNTY.

President, J. D. Malone.....Marietta.
Vice-Pres., E. M. Baily.....Acworth.
Secretary, W. A. Miller.....Marietta.
Delegate 1907, W. A. Miller.

MEMBERS.

W. C. Humphries .....Acworth.
W. M. Kemp .....Marietta.
J. E. Lester .....Kennesaw.
J. D. Malone .....Marietta.
W. A. Miller .....Marietta.
J. D. Middlebrooks .. ..Powder Springs.
C. T. Nolan .....Marietta.
H. V. Reynolds .....Marietta.
J. M. Strickland .....Austell.

COFFEE COUNTY.

President, W. F. Sibbett.....Douglas.
Secretary, T. W. Dorsett.....Willacoochee.
Delegate 1907, T. W. Dorsett.

MEMBERS.

R. J. Bruce, ...Broxton.
W. C. Brian .....Douglas.
T. W. Dorsett .....Willacoochee.
C. L. Drew .....Willacoochee.
Q. Holton .....Broxton.
S. L. McElroy .....Ocilla.
D. H. Meeks .....Nichols.

E. H. Perkins .....Nichols.
B. G. Poer.....Broxton.
G. M. Ricketson .....Broxton.
W. F. Sibbett .....Douglas.
W. W. Terrell .....Douglas.
S. L. Vinson.....Nichols.
H. C. Whelchel.....Douglas.
J. Wilcox .....Willacoochee.

COLQUITT COUNTY.

President, W. L. Jerkins.....Moultrie.
Secretary, R. C. Lindsey.....Moultrie.
Delegate 1907, C. B. Harroll.

MEMBERS.

Lee Bond .....Barney.
E. Daniel .....Moultrie.
C. A. Edwards.....Doerun.
J. H. Hall.....Norman Park.
C. B. Harroll.....Doerun.
D. B. Harroll.....Doe Run.
W. J. Hicks.....Moultrie.
W. S. Howell.....Moultrie.
W. L. Jerkins.....Moultrie.
J. E. Lanier.....Moultrie.
R. C. Lindsey.....Moultrie.
S. T. Register.....Norman Park.
F. W. Tyler.....Norman Park.
G. G. Tyson.....Funston.

COWETA COUNTY.

President, T. B. Davis.....Newnan.
Secretary, T. S. Baily.....Newnan.
Delegate 1907, T. J. Jones.

MEMBERS.

T. S. Bailey.....Newnan.
A. A. Barge.....Newnan.
J. L. Barge.....Newnan.
J. M. Couch.....Moreland.
W. F. Culpepper.....Senoia.
T. B. Davis.....Newnan.
R. E. Foster.....Sharpsburg.
A. R. Hogg.....Senoia, R. F. D.
J. C. Jackson.....Newnan, R. F. D.
T. J. Jones.....Newnan.
R. D. Lee.....Newnan.
E. L. Merrell.....Senoia.
A. C. North.....Newnan.
Paul E. Penniston.....Newnan.
W. H. Tanner.....Newnan, R. F. D.
J. B. Wood.....Harralson.

CRAWFORD COUNTY.

MEMBERS.

L. J. LeSeur.....Roberta.
C. H. Walker.....Roberta.

DECATUR COUNTY.

President, J. A. Parsons.....Brinson.
Secretary, J. C. Neely.....Bainbridge.
Delegate 1907, Thos. Chason.

MEMBERS.

V. Berry.....Bainbridge.
H. H. Brinson.....Brinson.
G. B. Carter.....Climax.
S. T. Carter.....Climax.
Gordon Chason.....Bainbridge.

J. D. Chason.....Bainbridge.
Thos. Chason .....Lela.
J. C. Neely.....Bainbridge.
J. A. Parsons.....Brinson.
W. M. Richardson.....Iron City.
J. A. B. Sikes.....Iron City.
N. L. Spengler.....Donaldsonville.
Jno. E. Toole.....Bainbridge.
R. F. Wheat.....Amsterdam.

DEKALB COUNTY.

President, H. M. Smith.....Edgewood.
Secretary, W. S. Ansley.....Decatur.
Delegate 1907, W. S. Ansley.

MEMBERS.

W. S. Ansley.....Decatur.
A. A. Bagwell.....Ingleside.
J. A. Bell.....Lithonia.
J. A. Farmer.....Lithonia.
E. F. Fincher.....East Atlanta.
R. P. Glenn.....Edgewood.
H. M. Smith.....Edgewood.
L. S. Smith.....Edgewood.
J. M. Tribble.....Lithonia.
A. R. Watkins.....Cross Keys.
F. M. Young.....Atlanta.

DOUGHERTY COUNTY.

President, P. L. Hilsman.....Albany.
Secretary, H. Robinson.....Albany.

MEMBERS.

W. W. Bacon.....Albany.
J. M. Barnett.....Pretoria.

W. L. Davis.....Albany.
A. H. Hilsman.....Albany.
P. L. Hilsman.....Albany.
H. Robinson .....Albany.

DOUGLAS COUNTY.

President, T. R. Whitley.....Douglasville.
Secretary, D. Houseworth.....Douglasville, R. F. D. 2.

MEMBERS.

W. K. Burnett.....Winston.
D. Houseworth .....Douglasville, R. F. D. 2.
J. L. Selman.....Douglasville.
J. R. Smith.....Douglasville.
T. R. Whitley.....Douglasville.

ELBERT COUNTY.

President, J. E. Johnson.....Elberton.
Secretary, A. S. J. Stovall.....Elberton.
Delegate 1907, W. J. Matthews.

MEMBERS.

F. L. Adams.....Elberton, R. F. D.
J. E. Cole.....Middleton.
J. A. Dillashaw.....Bowman.
L. P. Eberhardt.....Elberton.
J. E. Johnson.....Elberton.
A. J. Matthews.....Elberton.
A. B. Matthews.....Elberton.
W. J. Matthews.....Elberton.
A. C. Smith.....Elberton.
A. S. J. Stovall.....Elberton.
O. B. Walker.....Bowman.

EMANUEL COUNTY.

President, Geo. L. Smith.....Swainsboro.
Secretary, J. H. Chandler.....Swainsboro.
Delegate 1907, J. E. Coleman.

MEMBERS.

J. W. Bowie.....Summit.
J. H. Chandler.....Swainsboro.
E. T. Coleman.....Graymont.
V. E. Franklin.....Graymont.
R. E. Graham.....Nunez.
Grable Maye .....Morristown.
Will McNaughton .....Covena.
M. A. Mussond.....Stillmore.
C. R. Riner.....Summit.
Geo. L. Smith.....Swainsboro.
L. P. Youmans.....Swainsboro.

FANNIN COUNTY.

President, J. M. Daves.....Blue Ridge.
Secretary, C. B. Crawford.....Blue Ridge.
Delegate 1907, J. M. Daves.

MEMBERS.

H. E. Centers.....Ducktown, Tenn.
J. B. Chastain.....Blue Ridge.
A. F. Christopher.....Mineral Bluff.
C. B. Crawford.....Blue Ridge.
J. M. Daves.....Blue Ridge.
W. V. Garrett.....McCay, Tenn.
N. C. Goss.....Cartecay.
E. L. Prince.....Morganton.
J. H. Reynolds.....Ellijay.
J. S. Tankersley.....Ellijay.

FAYETTE COUNTY.

President, G. W. Wallis.....Fayetteville.
Secretary, E. C. Seawright.....Fayetteville.
Delegate 1907, J. A. S. Chambers.

MEMBERS.

J. A. S. Chambers.....Inman.
C. T. Hutcheson .....Woolsey.
J. A. Lester.....Fayetteville.
E. C. Seawright.....Fayetteville.
G. W. Wallace.....Fayetteville.
J. E. H. Ware.....Senoia, R. F. D.
J. B. Weldon.....Fayetteville.

FLOYD COUNTY.

President, W. J. Shaw.....Rome.
Secretary, W. L. Funkhouser.....Rome.
Delegate 1907, J. W. Curry.

MEMBERS.

J. B. Ballinger.....Armuchee.
H. H. Battey.....Rome.
J. N. Cheney.....Silver Creek.
R. P. Cox.....Rome.
J. W. Curry.....Rome.
Wm. DeLay .....Rome.
W. L. Funkhouser.....Rome.
T. R. Garlington.....Rome.
R. M. Gray.....Everett Springs.
Chas. Hamilton .....Rome.
L. P. Hammond.....Rome.
R. M. Harbin.....Rome.
W. P. Harbin.....Rome.
J. E. Ivey.....Rome.

W. T. McKinney.....Armuchee.
J. L. Murdock.....Lindale.
I. Sewell .....Cave Springs.
W. J. Shaw.....Rome.
H. A. Turner.....Rome.
J. C. Watts.....Rome.
R. H. Wicker.....Rome.

FORSYTH COUNTY.

President, John Hockenhull.....Cumming.
Secretary, Jno. H. Hockenhull....Cumming.
Delegate 1907, T. L. Lipscomb .

MEMBERS.

W. L. Bennett.....Cumming, R. F. D. 7.
M. T. Bramlett.....Cumming, R. F. D. 1.
G. P. Brice.....Flowery Branch, R. 2.
John Hockenhull .....Cumming.
J. H. Hockenhull, Jr.....Cumming.
T. L. Lipscomb.....Cumming, R. F. D. 1.
J. A. Otwell.....Gainesville, R. F. D. 11
B. W. Pirkle.....Gainesville, R. F. D. 11
W. W. Pirkle.....Cumming, R. F. D. 2.
A. Strickland .....Cumming, R. F. D. 2.

FRANKLIN COUNTY.

MEMBERS.

G. F. Bush.....Carnesville.

GLASSCOCK COUNTY.

President, T. J. M. Kelly.....Gibson.
Secretary, R. T. Lasseter.....Gibson.
Delegate 1907, T. J. M. Kelly.

MEMBERS.

J. B. Brooks.....Agricola
J. M. Glover.....Gibson.
T. J. M. Kelly.....Gibson.
B. B. Kitchens.....Mitchell.
R. T. Lasseter.....Gibson.

FULTON COUNTY.

President, Claude A. Smith.....Atlanta.
Secretary, M. Hoke .....Atlanta.

Delegates 1907:

W. G. Goldsmith .....Atlanta.
Dunbar Roy .....Atlanta.
M. Hoke .....Atlanta.
Claude A. Smith .....Atlanta.

MEMBERS.

C. R. Andrews .....Atlanta.
L. Amster .....Atlanta.
W. B. Armstrong .....Atlanta.
W. T. Asher .....Atlanta.
Arch Avary .....Atlanta.
J. C. Avary .....Atlanta.
J. B. Baird .....Atlanta.
S. T. Ballenger .....Atlanta.
S. T. Barnett .....Atlanta.
A. H. Baskin .....Atlanta.
C. F. Benson .....Atlanta.
M. T. Benson .....Atlanta.
E. B. Block .....Atlanta.
F. K. Boland .....Atlanta.
C. E. Boynton .....Atlanta.
J. H. Bradfield .....Atlanta.

Frances Bradley ..... Atlanta.
J. N. Brawner ..... Atlanta.
Geo. Brown ..... Atlanta.
W. T. Brown ..... Atlanta.
A. W. Calhoun ..... Atlanta.
J. L. Campbell ..... Atlanta.
M. G. Campbell ..... Atlanta.
W. E. Campbell ..... Atlanta.
E. C. Cartledge ..... Atlanta.
W. L. Champion ..... Atlanta.
L. B. Clarke ..... Atlanta.
T. J. Collier ..... Atlanta.
H. P. Cooper ..... Atlanta.
J. H. Crawford ..... Atlanta.
J. M. Crawford ..... Atlanta.
L. M. Crichton ..... Atlanta.
J. D. Cromer ..... Atlanta.
W. A. Crowe ..... Atlanta.
E. C. Davis ..... Atlanta.
H. R. Donaldson ..... Atlanta.
R. T. Dorsey ..... Atlanta.
J. W. Duncan ..... Atlanta.
R. R. Daily ..... Atlanta.
J. G. Earnest ..... Atlanta.
W. S. Elkin ..... Atlanta.
J. N. Ellis ..... Atlanta.
W. B. Emery ..... Atlanta.
L. C. Fisher..... Atlanta.
J. R. Garner ..... Atlanta.
J. McF. Gaston ..... Atlanta.
C. G. Giddings ..... Atlanta.
W. L. Gilbert ..... Atlanta.
J. M. Goldsmith ..... Atlanta.
A. P. Flowers ..... Atlanta.
W. S. Goldsmith ..... Atlanta.

T. H. Hancock ..... Atlanta.
L. S. Hardin ..... Atlanta.
H. F. Harris ..... Atlanta.
J. H. Hines ..... Atlanta.
A. G. Hobbs ..... Atlanta.
F. G. Hodgson ..... Atlanta.
Michael Hoke ..... Atlanta.
J. B. S. Holmes ..... Atlanta.
T. V. Hubbard ..... Atlanta.
M. McH. Hull ..... Atlanta.
J. S. Hurt ..... Atlanta.
J. W. Hurt ..... Atlanta.
M. B. Hutchins ..... Atlanta.
W. A. Jackson ..... Atlanta.
W. C. Jarnagin ..... Atlanta.
J. L. Jarvis ..... Atlanta.
J. H. Johns ..... Atlanta.
J. C. Johnson ..... Atlanta.
E. G. Jones ..... Atlanta.
Louis H. Jones ..... Atlanta.
W. T. Jones ..... Atlanta.
W. S. Kendrick ..... Atlanta.
J. P. Kennedy ..... Atlanta.
R. R. Kime ..... Atlanta.
J. C. King ..... Atlanta.
J. N. LeConte ..... Atlanta.
A. H. Lindorme ..... Atlanta.
H. M. Lokey ..... Atlanta.
T. C. Longino ..... Atlanta.
T. D. Longino ..... Atlanta.
J. L. McDaniel ..... Atlanta.
F. W. McRae ..... Atlanta.
P. L. Moon ..... Atlanta.
C. E. Murphy ..... Atlanta.
W. P. Nicolson ..... Atlanta.

G. H. Noble ..... Atlanta.
J. C. Olmstead ..... Atlanta.
W. B. Parks ..... Atlanta.
L. T. Patillo ..... Atlanta.
Geo. F. Payne ..... Atlanta.
B. E. Pearce ..... Atlanta.
W. E. Person ..... Atlanta.
S. G. Pinckney ..... Atlanta.
M. A. Purse ..... Atlanta.
K. L. Reid ..... Atlanta.
E. H. Richardson ..... Atlanta.
B. F. Riley ..... Atlanta.
J. B. Roberts ..... Atlanta.
W. C. Robinson ..... Atlanta.
L. C. Roughlin ..... Atlanta.
Dunbar Roy ..... Atlanta.
S. M. Samuels ..... Atlanta.
Miss Annie Sawyer ..... Atlanta.
H. F. Scott ..... Atlanta.
W. A. Selman ..... Atlanta.
W. B. Sharp ..... Atlanta.
J. R. Simpson ..... Atlanta.
Archibald Smith ..... Atlanta.
Claude A. Smith ..... Atlanta.
W. M. Smith ..... Atlanta.
I. C. Smullyan ..... Atlanta.
J. E. Sommerfield ..... Atlanta.
L. P. Stephens ..... Atlanta.
A. W. Stirling ..... Atlanta.
C. C. Stockard ..... Atlanta.
C. W. Strickler ..... Atlanta.
F. M. Sutton ..... Atlanta.
W. E. Taylor ..... Atlanta.
E. C. Thrash ..... Atlanta.
J. S. Todd ..... Atlanta.

Theo. Toepel .....Atlanta.
G. C. Trimble .....East Point.
A. H. Vandyke .....Atlanta.
E. VanGoidtsnoven .....Atlanta.
S. A. Visanska .....Atlanta.
C. P. Ward .....Atlanta.
W. F. Westmoreland .....Atlanta.
A. E. Wheeler .....Atlanta.
W. E. Wilmerding .....Atlanta.
J. C. White .....Atlanta.
Bernard Wolff .....Atlanta.
H. S. Wright .....Atlanta.
Willis Jones .....Atlanta.
A. G. DeLoach .....Atlanta.
N. J. Grizzard .....Atlanta.
D. J. Manget .....Atlanta.
J. E. Paullin .....Atlanta.
S. R. Roberts .....Atlanta.
John F. Denton .....Atlanta.
I. T. Catron .....Atlanta.
Geo. W. Willett .....Atlanta.
Mrs. Rebecca C. Brannon.....Atlanta.

GLYNN COUNTY.

President, J. A. Butts.....Brunswick.
Secretary, J. W. Simmons, Jr.....Brunswick
Delegate 1907, G. W. Blanton.

MEMBERS.

A. C. Blain.....Brunswick.
G. W. Blanton.....Brunswick.
H. M. Branham.....Brunswick.
V. G. Brown.....Waynesville.
J. A. Butts.....Brunswick.

G. V. Cate.....Brunswick.
Alfred Christie .....Brunswick.
A. J. Gordon.....Waynesville.
J. P. Harrell.....Brunswick
J. W. Simmons, Jr.....Brunswick.

GORDON COUNTY.

President, G. W. Mills.....Calhoun.
Secretary, J. M. Erwin.....Calhoun.
Delegate 1907, G. W. Mills.

MEMBERS.

D. J. Borders.....Red Bud.
W. A. Borders.....Sonoraville.
W. H. Conn.....Sugar Valley.
J. M. Erwin.....Calhoun.
B. W. Fite.....Resaca.
W. B. Floyd.....Plainville.
C. F. McLain.....Calhoun.
G. W. Mills.....Calhoun.
W. A. Richards.....Calhoun.
T. C. Rollins.....Dalton.
H. L. Erwin.....Dalton.
J. C. Ellis.....Fairmont.
W. H. Holbrook.....Dalton.

GRADY COUNTY.

Secretary, W. E. Oliver.....Cairo.
Delegate 1907, E. Clower.

MEMBERS.

E. Clower .....Cairo.
J. A. Lindsey.....Cairo.
M. M. McCord.....Whigham.
W. E. Oliver.....Cairo.
A. A. Walker.....Cairo.

GREENE COUNTY.

(None.)

GWINNETT COUNTY.

President, W. J. Rowe.....Buford.
Secretary, P. F. Dickens.....Duluth.
Delegate 1907, W. P. Walker.

MEMBERS.

P. F. Dickens .....Duluth.
O. D. Hall .....Norcross.
W. J. Rowe .....Buford.
W. P. Walker.....Norcross.
B. V. Wilson .....Dacula.

HABERSHAM COUNTY.

President, O. T. White.....Mt. Airy.
Secretary, J. K. Burns.....Clarkesville.
Delegate 1907, J. W. Crawford

MEMBERS.

J. K. Burns .....Clarkesville.
J. W. Crawford .....Cornelia.
A. B. Garland .....Cornelia.
R. B. Lamb .....Demorest.
O. T. White .....Mt. Airy.

HALL COUNTY.

President, J. H. Downey .....Gainesville.
Secretary, P. E. B. Robertson.....Gainesville.
Delegate 1907, J. H. Downey.

MEMBERS.

J. W. Baily .....Gainesville.
W. B. Barnwell .....Oakwood.

L. R. Bryson ..... Gainesville, R. F. D.
A. J. Cavinder ..... Dahlonega.
J. D. Cobb ..... Flowery Branch.
J. H. Downey ..... Gainesville.
T. C. Gower ..... Gainesville.
J. A. Kitchens ..... Gainesville. R. F. D.
W. B. Lockhart ..... Lula, R. F. D.
J. D. Mauldin ..... New Holland.
E. Nott ..... Gainesville Cot. Mills
W. E. Paris ..... Gainesville.
P. E. B. Robertson ..... Gainesville.
H. L. Rudolph ..... Gainesville.
J. B. Rudolph ..... Gainesville.
K. A. Smith ..... Gainesville.

HARRIS COUNTY.

President, V. G. Williams..... Chipley.
V.-Pres., J. L. Riley..... Hamilton.
Secretary, W. E. Farley ..... Hamilton.
Delegate 1907, W. C. Campbell.... Chipley.

MEMBERS.

W. C. Campbell ..... Chipley.
W. E. Farley ..... Hamilton.
V. G. Williams ..... Chipley.
J. L. Sappington ..... Whitesville.

HEARD COUNTY.

President, J. D. Cook ..... Cooksville.
Secretary, J. R. Daniel ..... Franklin.
Delegate 1907, C. M. Mickle.

MEMBERS.

J. D. Cook ..... Cooksville.
J. R. Daniel ..... Franklin.

J. W. Daniel .....Franklin.
C. M. Mickle .....Texas.
J. B. Sanders .....Corinth.
A. G. Wortham .....Centralhatchee.
G. W. Hammond .....Franklin.

HENRY COUNTY.

President, D. W. Scott.....McDonough.
Secretary, J. G. Smith .....McDonough.
Delegate 1907, J. A. Combs.

MEMBERS.

J. A. Combs .....Locust Grove.
H. C. Ellis .....Locust Grove.
E. C. Colvin .....Locust Grove.
J. E. Woods .....McDonough, R.F.D.
J. G. Smith .....McDonough.
A. R. Scott .....McDonough.
C. D. McDonald .....McDonough.
D. W. Scott .....McDonough.
G. E. Weems .....McDonough.
T. W. Redwine .....Hampton.
C. L. Tucker .....Griffin.
B. E. Horton .....McDonough.

HOUSTON COUNTY.

President, O. G. Singleton.....Fort Valley.
Sec.-Treas., R. L. Cater.....Perry.
Delegate 1907, J. R. Kinney.....Fort Valley
Alternate, R. L. Cater. .....Perry.

MEMBERS.

M. S. Brown .....Fort Valley.
V. L. Brown .....Fort Valley.
R. L. Cater .....Perry.

J. D. Coleman .....Henderson
H. M. Holtzclaw .....Perry.
J. R. Kinney .....Fort Valley.
C. R. Mann. .....Perry.
J. O. Mann .....Elko.
O. G. Singleton .....Fort Valley.
J. W. Story .....Kathleen.
W. S. White. .....Fort Valley.
B. Williams .....Bonair.

IRWIN AND BEN HILL COUNTIES.

President, D. B. Ware.....Fitzgerald.
Secretary, L. S. Osborne.....Fitzgerald.
Delegate 1907, L. S. Osborne.

MEMBERS.

C. W. Ashley .....Ocilla.
L. H. Bartee .....Fitzgerald.
T. E. Bradley .....Osierfield.
W. J. Dismuke .....Irwinville.
E. J. Dorminy .....Fitzgerald.
W. D. Dorminy .....Fitzgerald.
J. L. Frazer .....Fitzgerald.
J. B. George .....Ocilla.
J. E. Goethe .....Ocilla.
A. Harper .....Wray.
J. R. Howell .....Ocilla.
E. W. Hungate .....Fitzgerald
J. C. Luke .....Ocilla.
L. S. Osborne .....Fitzgerald.
E. A. Russell. .....Fitzgerald.
D. F. Thompson .....Fitzgerald.
D. B. Ware .....Fitzgerald.
R. M. Ware .....Fitzgerald.
C. B. White. .....Fitzgerald.
C. H. Wilcox .....Irwinville.

JACKSON COUNTY.

President, L. J. Sharp.....Commerce.
Secretary, J. A. Brian .....Pendergrass.
Delegate 1907, L. G. Hardeman...Commerce.

MEMBERS.

L. C. Allen .....Hoschton.
J. C. Bennett .....Jefferson.
C. O. Brock .....Jefferson.
J. A. Brian .....Pendergrass.
J. C. Elder .....Jefferson.
L. G. Hardman .....Commerce.
W. B. Hardman .....Commerce.
F. M. Hubbard .....Commerce.
M. F. Nelms .....Commerce.
L. N. Osborn .....Maysville, R. F. D.
Laetus Saunders .....Commerce.
L. J. Sharp .....Commerce.
O. E. Shankle .....Commerce.
S. J. Smith .....Jefferson.
H. G. Strickland .....Athens, R. F. D.
A. D. White .....Pendergrass.

JEFFERSON COUNTY.

(None.)

JENKINS COUNTY.

President, R. Y. Lane.....Millen.
Secretary, W. W. Evans .....Millen.
Delegate 1907, C. E. Holmes.

MEMBERS.

L. J. Belt .....Millen.
H. F. Bent .....Herndon.

W. W. Evans .....Millen.
C. E. Holmes .....Millen.
H. A. Jones .....Millen.
J. W. Jones .....Thrift.
B. F. Johnson .....Butts, R. F. D.
J. L. Kirkendoll .....Millen.
R. Y. Lane. .....Millen.
W. E. Rushing.. .....Perkins.

JONES COUNTY.

Secretary, H. L. Anchors.....Haddock.

MEMBERS.

J. F. Anderson .....Clinton.
J. W. Anderson .....Clinton.
H. L. Anchors .....Haddock.
Jno. Hardman .....Haddock.
S. B. Poland .....Gray.
T. A. White .....Round Oak.

LAURENS COUNTY.

President, R. H. Stanley.....Dublin.
Secretary, J. M. Page .....Dublin.
Delegate 1907, J. E. New.

MEMBERS.

J. J. Barton .....Dublin.
W. R. Brigham .....Dublin.
W. E. Beddingfield .....Rentz.
F. Bright .....Dublin.
R. J. Chappell .....Dudley.
L. P. Fordham .....Dublin.
T. H. Hall .....Dublin.
E. New .....Dublin.
J. E. New .....Dexter.

J. M. Page... .....Dublin.
H. Rushin .....Dublin.
W. C. Sessoms .....Brewton.
R. H. Stanley .....Dublin.
W. B. Taylor .....Dexter.
L. J. Thomas. .....Dublin.
M. D. Vickers .....Lallie.
S. Walker .....Dublin.
J. L. Weddington .....Dublin.

LINCOLN COUNTY.

President, H. L. Culbertson.....Amity.
Secretary, J. C. Groves .....Lincolnton.
Delegate 1907, J. C. Groves.

MEMBERS.

A. W. Burch. .....
J. J. Burch .....Double Branches.
W. B. Crawford .....Lincolnton.
H. L. Culbertson .....Amity.
W. H. Estes .....Leathersville.

MACON COUNTY.

MEMBERS.

Chas. A. Greer .....Oglethorpe.
Geo. M. Niles .....Marshallville.

M'DUFFIE COUNTY.

President, E. S. Harrison.....Thomson.
Secretary, B. F. Riley, Jr.....Thomson.
Delegate 1907, Z. M. Story.

MEMBERS.

S. Gibson .....Thomson.
E. S. Harrison .....Thomson.

A. J. Mathews ..... Thomson.
B. F. Riley, Jr. ..... Thomson.
D. A. Rogers ..... Dearing.
Z. M. Story ..... Winfield.
F. N. Ware ..... Thomson.

MADISON COUNTY.

Secretary, A. J. Griffith..... Comer.

MEMBERS.

W. D. Gohlstin. ..... Danielsville.
A. J. Griffith. ..... Comer.
R. J. Westbrook ..... Danielsville.
G. W. Westbrook ..... Danielsville, R. F. D.
J. L. Baker ..... Carlton.

MARION COUNTY.

MEMBERS.

S. A. Murray ..... Buena Vista.

MERIWETHER COUNTY.

President, E. B. Terrell ..... Greenville.
Secretary, P. W. Fitts ..... Greenville.

MEMBERS.

J. L. Dixon ..... Woodbury.
W. P. Ellis ..... Gay.
R. B. Gilbert ..... Greenville.
W. L. Grant ..... Stinson.
P. W. Fitts ..... Greenville.
J. W. Pinkston ..... Greenville.
C. E. Stipes ..... Odessadale.

MILLER COUNTY.

President, E. B. Bush .....Colquitt.
Secretary, E. B. Baughn .....Colquitt.

MEMBERS.

E. B. Baughn .....Colquitt.
J. P. Cook .....Colquitt.
W. L. Pattòn .....Milltown.

MITCHELL COUNTY.

(None.)

MONTGOMERY COUNTY.

MEMBERS.

J. W. Palmer .....Ailey.
M. L. Currie .....Ailey.

MONROE COUNTY.

President, G. L. Alexander.....Forsyth.
Secretary, J. F. Lancaster.....Forsyth.

MEMBERS.

G. L. Alexander .....Forsyth.
J. O. Elrod .....Forsyth.
R. C. Goolby .....Forsyth.
J. F. Lancaster .....Forsyth.
J. H. Maddox .....Culloden.
R. C. Moseley .....Bolingbrook.
W. P. Ponder .....Forsyth.
J. R. Shannon .....Cabaniss.
S. H. Smith .....Culloden.
Samuel Wilson .....Strouds.

MORGAN COUNTY.

President, W. E. Adams.....Madison.
Secretary, H. T. Harriss.....Madison.
Delegate, 1907, W. E. Adams .....Madison.

MEMBERS.

W. E. Adams .....Madison.
A. K. Bell .....Madison.
H. T. Harriss .....Madison.
F. M. Prior .....Apalachee.
J. L. Porter .....Rutledge.
C. F. Rider .....Bostwick.
W. L. Rogers .....Buckhead.
R. W. Trotter .....Madison.
J. H. Trout. .....Pennington.

MUSCOGEE COUNTY.

President, J. H. McDuffie.....Columbus.
Secretary, Martin Crook.....Columbus.
Delegate, 1907, C. L. Williams.

MEMBERS.

B. W. Allen .....Columbus.
J. M. Anderson .....Columbus.
W. L. Bullard .....Columbus.
W. L. Cooke .....Columbus.
J. M. Crook .....Columbus.
M. Crook. .....Columbus.
W. L. DesPortes .....Columbus.
C. A. Dexter .....Columbus.
J. I. Darby .....Columbus.
I. C. Evans .....Columbus.
W. T. Gautier .....Columbus.
G. J. Grimes .....Columbus.

C. N. Howard. .....Columbus.
B. B. Jameson .....Columbus.
T. N. Kitchens .....Columbus.
J. H. McDuffie .....Columbus.
T. E. Mitchell .....Columbus.
J. T. Moncrieff .....Columbus.
H. S. Munroe. .....Columbus.
E. H. Sims .....Columbus.
J. M. Threadgill .....Columbus.
C. L. Williams .....Columbus.
J. R. Youmans .....Columbus.
S. E. Young .....Midland.

NEWTON COUNTY.

President, W. D. Travis .....Covington.
Secretary, O. L. Holmes .....Covington, R. F. D.
Delegate 1907, R. L. Hollis.

MEMBERS.

N. Z. Anderson .....Covington.
S. W. Everett .....Almon.
J. T. Gibson .....Covington.
R. L. Hollis .....Hayston.
O. L. Holmes .....Covington, R. F. D.
W. D. Travis .....Covington, R. F. D.

OCMULGEE MEDICAL ASSOCIATION—DODGE—PULASKI—TELFAIR.

President, J. F. Powell .....Eastman, R. F. D.
Secretary, W. E. Miller.....Eastman.
Delegate 1907, W. B. Carswell.

MEMBERS.

W. H. Born .....McRae.
E. C. Brown .....Hawkinsville.

G. A. Burch ..... Jacksonville.
W. B. Carswell ..... Cochran.
J. B. Clark ..... Eastman.
O. F. Cullom ..... Chauncey.
Chas. J. Clark ..... Chauncey.
J. D. Herman ..... Eastman.
J. H. Hall ..... Townes.
B. M. Kennon ..... McRae.
N. P. Jelks ..... Hawkinsville.
F. M. Jordan ..... Hawkinsville.
W. C. Maloy ..... Rine.
H. S. Maloy ..... Milan.
J. L. Matthews ..... Hawkinsville.
W. A. Matthews ..... Hawkinsville.
W. E. Miller ..... Eastman.
R. J. Morgan ..... Cochran.
LeRoy Napier ..... Lumber City.
J. F. Powell ..... Eastman, R. F. D.
J. B. Reynolds ..... Lumber City.
J. R. Rose. ..... Eastman.
J. N. Roland ..... Cochran.
A. A. Smith. ..... Hawkinsville.
A. L. Smith ..... Empire.
H. J. Smith ..... Yonker.
S. P. Smith ..... McRae.
J. J. Stone. ..... Hawkinsville.
C. E. Taylor ..... Cochran.
T. D. Walker ..... Cochran.
R. L. Whipple ..... Cochran.
A. L. Wilkins ..... Eastman.

OCONEE COUNTY.

Secretary, W. M. White ..... Watkinsville.
Delegate, S. A. Elder..... High Shoals.

MEMBERS.

W. T. Haygood ..... Farmington.
J. T. Elder ..... Farmington.
J. W. Hinton ..... High Shoals.
E. H. Kennimer ..... Bishop.

PICKENS COUNTY.

President, W. B. Tate ..... Tate.
Secretary, F. C. Richards..... Jasper.
Delegate, 1907 T. C. Richards.

MEMBERS.

W. C. McLain ..... Marble Hill.
F. C. Richards ..... Jasper.
W. B. Tate ..... Tate.

PIERCE COUNTY.

MEMBERS.

W. R. Moore ..... Patterson.
J. H. O'Quin ..... Patterson.

PIKE COUNTY.

President, J. C. Beachamp..... Williamson.
Secretary, M. M. Head..... Zebulon.
Delegate 1907, M. M. Head..... Zebulon.

MEMBERS.

J. M. Anderson ..... Barnesville.
W. H. Aycock ..... Williamsson.
J. C. Beachamp ..... Williamson.
J. A. Corry ..... Barnesville.
J. R. Graves ..... Zebulon.
M. M. Head ..... Zebulon.
R. A. Mallory ..... Concord.

G. M. McDowell .....Molena.
J. H. Phillips .....Milner.
J. M. Rogers .....Barnesville.
S. Rumble .....Barnesville.
J. O. Whatley .....Barnesville.
C. H. Willis .....Barnesville.

POLK COUNTY.

President, R. N. Spinks .....Cedartown.
Secretary, Seals L. Whiteley.....Cedartown.
Delegate 1907, W. G. England.

MEMBERS.

W. M. Bradford .....Cedartown.
W. A. Chapman .....Cedartown.
J. J. Cooper .....Cedartown.
W. G. England .....Cedartown.
Henry Hall .....Cedartown.
J. A. Lidell .....Cedartown.
C. W. Peek .....Cedartown.
J. E. Penington .....Esom Hill.
W. W. Tison .....Cedartown.
R. N. Spinks .....Cedartown.
Seals L. Whiteley .....Cedartown.
C. V. Wood .....Cedartown.

PUTNAM COUNTY.

President, V. H. Taliaferro.....Eatonton.
Secretary, S. A. Clark.....Eatonton.
Delegate 1907, J. D. Weaver.

MEMBERS.

E. H. Adams .....Eatonton, R. F. D.
S. A. Clark .....Eatonton.
J. Ledbetter. .....Nona.

L. O. McCalla .....Eatonton.
W. B. Moore .....Eatonton.
E. R. Pinkerton .....Eatonton, R. F. D.
V. H. Taliaferro .....Eatonton.
D. L. Thomas .....Eatonton.
E. Y. Walker .....Willard.
J. D. Weaver .....Eatonton.

RANDOLPH COUNTY.

President, F. D. Paterson.....Cuthbert.
Secretary, F. G. Barfield .....Cuthbert.
Delegate 1907, G. Y. Moore.

MEMBERS.

T. H. Andrews .....Cuthbert.
F. G. Barfield .....Cuthbert.
W. W. Binion .....Benevolence.
B. E. Bridgeman .....Shellman.
A. L. Critendon.....Shellman.
J. H. Hendry .....Shellman.
F. M. Martin .....Shellman.
E. C. McCurdy .....Shellman.
G. Y. Moore .....Cuthbert.
F. D. Paterson .....Cuthbert.
F. S. Rogers .....Coleman.
W. T. Rogers .....Coleman.
A. F. Weathers .....Shellman.

RICHMOND COUNTY.

President, W. C. Lyle .....Augusta.
Secretary, G. A. Traylor.....Augusta.
Delegate 1907, T. E. Oertel.

MEMBERS.

J. E. Allen .....Augusta.

W. W. Battey ..... Augusta.
W. W. Battey, Jr..... Augusta.
G. V. Baxley ..... Grovetown.
J. R. Beall ..... Blythe.
C. A. Blanchard ..... Augusta.
H. Brooks ..... Augusta.
C. P. Brightwell ..... Augusta.
C. J. Brepans ..... Augusta.
H. J. Baker ..... Augusta.
T. D. Coleman ..... Augusta.
C. W. Crane ..... Augusta.
A. A. Davidson ..... Augusta.
A. J. Deas ..... Augusta.
W. H. Doughty, Jr..... Augusta.
H. J. Eve ..... Augusta.
R. C. Eve ..... Augusta.
E. C. Goodrich ..... Augusta.
W. H. Goodrich ..... Augusta.
S. Hankinson ..... Hephzibah.
W. H. Harrison, Jr..... Augusta.
W. Z. Holliday ..... Augusta.
W. R. Houston ..... Augusta.
J. M. Hull ..... Augusta.
W. D. Jennings, Jr. ..... Augusta.
W. C. Kellogg ..... Augusta.
A. J. Kirkpatrick ..... Augusta.
G. H. Lehman. ..... Augusta.
M. S. Levy ..... Augusta.
J. R. Littleton. ..... Augusta.
W. C. Lyle. ..... Augusta.
H. M. Mitchell ..... Augusta.
C. J. Montgomery ..... Augusta.
N. M. Moore. ..... Augusta.
J. B. Morgan. ..... Augusta.
G. W. Mountain ..... Augusta.

W. A. Mulherrin.....Augusta.
E. E. Murphy.....Augusta.
T. E. Oertel.....Augusta.
E. P. Rice.....Augusta.
W. F. Rosborough.....Augusta.
H. W. Shaw.....Augusta.
A. H. Story.....Augusta.
L. P. Tessier.....Augusta.
G. A. Traylor.....Augusta.
A. C. Wade.....Augusta.
G. A. Wilcox.....Augusta.
J. B. Wright.....Augusta.
T. R. Wright.....Augusta.
R. J. Walton.....Harlem.

SCREVEN COUNTY.

President, J. W. Powell.....Sylvania.
Secretary, G. M. Overstreet.....Sylvania.
Delegate 1907, G. S. Roach.

MEMBERS.

D. H. Blackburn.....Ogeechee, R. F. D.
G. L. Chapman.....Rocky Ford.
H. W. Doster.....Rocky Ford.
H. E. Ezell.....Oliver.
A. S. Joyner.....Sylvania, R. F. D.
A. D. Lewis.....Sylvania.
W. R. Lovett.....Sylvania.
G. L. Mills.....Tuckahoe.
Frank Mimms.....Mears.
S. W. Mims.....Sylvania.
G. M. Overstreet.....Sylvania.
B. F. Powell.....Sylvania, R. F. D.
J. W. Powell.....Sylvania.
G. S. Roach.....Woodcliff.
B. R. Saxon.....Sylvania.

SOUTH FULTON, CLAYTON AND CAMPBELL COUNTIES.

President, C. M. Curtis.....College Park.
Secretary, J. H. Dennard.....East Point.
Delegate 1907, C. M. Curtis.

MEMBERS.

T. C. Cannon.....Jonesboro.
J. S. Cousins.....Jonesboro.
C. M. Curtis.....College Park.
C. H. Davenport.....Fairburn.
J. H. Dennard.....East Point.
C. B. Floyd.....Fairburn.
J. T. Henley.....College Park.
J. T. Longino.....Fairburn.
E. P. Mixon.....East Point.
J. R. Wallis.....Lovejoy.

SOUTH GEORGIA MEDICAL ASSOCIATION—DOOLY—CRISP.

President, J. T. Gammage.....Pineview.
Secretary, T. J. McArthur.....Cordele.
Delegates 1907, J. A. Ward, V. O. Harvard.

MEMBERS.

T. F. Bivings.....Vienna.
W. I. Butler.....Unadilla.
T. Cox .....Arabi.
B. Daniel .....Cordele.
E. B. Davis.....Byronville.
W. E. Edwards.....Cordele.
W. N. Edenfield.....Pinehurst.
J. T. Gammage.....Pineview.
W. R. Googe .....Abbeville.
V. O. Harvard.....Arabi.
A. R. Heyward.....Warwick.

T. J. McArthur.....Cordele.
G. C. McKenzie.....Arabi.
J. S. McKenzie.....Cordele.
H. A. Mobley.....Vienna.
S. Neal.....Cordele.
R. H. Pate.....Unadilla.
H. B. Roberts.....Cordele.
H. H. Shipp.....Finnleson.
M. R. Smith.....Cordele.
R. H. Stovall.....Vienna.
J. O. Teasley.....Lilly.
F. R. Wallace.....Cordele.
J. A. Ward.....Cordele.
M. Ward.....Pinehurst.
A. J. Whelchel.....Coney.
F. E. Williams.....Vienna.
L. O. Wooten.....Unadilla.

SPALDING COUNTY.

President, T. E. Drewry.....Griffin.
Secretary, J. M. Thomas.....Griffin.
Delegate 1907, J. M. Thomas.

MEMBERS.

E. R. Anthony.....Griffin.
W. M. Byne.....Griffin.
M. F. Carson.....Griffin.
T. J. Collier.....Griffin.
N. B. Drewry.....Griffin.
T. E. Drewry.....Griffin.
G. F. Johnson.....Griffin.
J. M. Kelly.....Griffin.
J. T. Mitchell.....Griffin.
J. L. Moore.....Griffin.
J. T. Nunnally.....Griffin.

T. J. Phillips.....Griffin.
J. F. Stewart.....Griffin.
R. H. Taylor.....Griffin.
J. M. Thomas.....Griffin.

STEPHENS COUNTY.

President, Jeff Davis.....Toccoa.
Secretary, Jas. H. Crawford.....Martin.
Delegate 1907, Jas. H. Crawford.

MEMBERS.

R. M. Alexander.....Martin.
C. L. Ayers.....Toccoa.
J. H. Crawford.....Martin.
F. C. Davis.....Toccoa.
Jeff Davis .....Toccoa.
J. H. Edge.....Toccoa.
H. M. Freeman.....Toccoa.
J. E. D. Isbell.....Toccoa.
Thos. H. Lyon.....Martin.
W. L. McBath.....Avalon.
W. H. Parker.....Mize.
J. H. Terrell.....Toccoa.
J. C. Verner.....Martin.

STEWART COUNTY—WEBSTER WITH STEWART.

President, R. E. L. Barnum.....Richland.
Secretary, A. G. Fort.....Lumpkin.
Delegate 1907, A. R. Wright ....Renfroe.
Alternate, J. F. Lunsford.....Preston.

MEMBERS.

R. E. L. Barnum.....Richland.
A. G. Fort.....Lumpkin.
T. F. Harper.....Weston.

J. M. Kenyon.....Weston.
J. F. Lunsford.....Preston.
J. C. Patterson.....Lumpkin.
W. W. Peek.....Louvale.
C. E. Pickett.....Richland.
W. C. Simms.....Richland.
J. B. Tanner.....Lumpkin.
M. Walton .....Coffinton.
J. S. Wimberly.....Lumpkin.
A. R. Wright.....Renfroe.

SUMTER COUNTY.

President, J. R. Statham.....Americus.
Secretary, D. B. Mays.....Americus.
Delegate 1907, G. T. Miller.....Americus.

MEMBERS.

D. A. Bagley .....Andersonville.
B. L. Bridges .....Ellaville.
R. E. Cato.....Americus.
A. J. Kemp .....Leslie.
H. J. Logan.....Americus, R. F. D.
D. B. Mayes .....Americus.
J. F. McMath .....Americus.
G. T. Miller .....Americus.
W. S. Prather .....Americus.
W. T. Simpson .....Smithville.
H. T. Simpson .....Smithville.
J. R. Statham .....Americus.
F. A. Thomas .....Americus.
B. T. Wise, ...Plains.

TALIAFERRO COUNTY.

President, A. C. Davidson.....Sharon.

Vice-President, J. A. Rhodes.....Crawfordville.
Secretary, A. H. Beazley.....Crawfordville.

MEMBERS.

L. R. Brown .....Sharon.
J. A. Rhodes .....Crawfordville.

TRI-COUNTY MEDICAL SOCIETY—CALHOUN—EARLY—

Secretary, W. M. Riley.....Arlington.

MEMBERS.

Wyatt Alexander .....Blakely.
Cobb Barksdale .....Blakely.
N. E. Benson .....Morgan.
G. T. Crozier .....Cedar Springs.
J. H. Crozier .....Cedar Springs.
L. P. Farmer.....Elmodel.
F. P. Griffin .....Leary.
P. E. Griffin .....Edison.
J. H. Hand .....Blakely.
C. J. Jenkins .....Edison.
W. J. Jennings .....Blakely.
P. H. Keaton .....Kestler.
K. M. McRagan .....Morgan.
W. M. Riley .....Arlington.
C. K. Sharp .....Arlington.
W. B. Standifer .....Blakely.
W. E. Sanders .....Arlington.
C. O. Tye .....Edison.
L. C. Ward .....Kestler.

TATTNALL COUNTY.

President, J. L. McLean.....Glennville.
Secretary, J. Wallace Daniel.....Claxton.
Delegate 1907, S. T. Ellis.....Hagan.

MEMBERS.

O. L. Alexander ..... Reidsville.
D. S. Clanton ..... Hagan.
A. B. Daniel ..... Claxton.
J. W. Daniel ..... Claxton.
L. A. DeLoach ..... Glennville.
G. W. Elabee ..... Daisy.
S. T. Ellis ..... Hagan.
J. M. Hughes ..... Glennville.
W. H. Mann ..... Glennville.
J. L. McLean ..... Glennville.
B. E. Miller ..... Claxton.
G. W. Toatle ..... Glennville.

TERRELL COUNTY.

President, J. G. Dean..... Dawson.
Vice-President, .O G. Cranford... Sasser.
Sec.-Treas, H. W. Harris..... Dawson.

MEMBERS.

J. T. Arnold ..... Parrott.
L. Lamar ..... Dawson.
O. T. Kenyan ..... Dawson.
J. H. Lewis ..... Dawson.
J. W. Patterson ..... Dawson.
L. Thomas ..... Doverel.

THOMAS COUNTY.

President, H. A. Vann..... Boston.
Vice-President, J. N. Isler..... Meigs.
Secretary, J. B. Palmer..... Thomasville.
Delegate 1907, A. P. Taylor.
Alternate, J. B. Palmer.

MEMBERS.

H. Ainsworth ..... Thomasville.
B. A. Daniels ..... Thomasville.
D. I. Dallas ..... Pavo.
C. H. Fergeson ..... Boston.
J. N. Isler ..... Meigs.
H. Jones ..... Cooledge.
D. C. Montgomery ..... Merrillville.
J. B. Palmer ..... Thomasville.
T. E. Sheffield ..... Ochlochnee.
Jno. Schrieber ..... Ochlochnee.
S. E. Sanchez ..... Barwick.
A. P. Taylor ..... Thomasville.
T. J. Taylor ..... Thomasville
H. A. Vann ..... Boston.

TIFT COUNTY.

President, W. H. Hendricks..... Tifton.
Secretary, O. Daniel ..... Tifton.
Delegate 1907, G. M. Mitchell.... Tifton.

MEMBERS.

J. B. S. Blitch ..... Brookfield.
O. Daniel ..... Tifton.
W. G. Devane ..... Omega.
W. H. Hendricks ..... Tifton.
G. W. Holmes ..... Tifton.
G. W. Julian ..... Tifton.
J. A. McCrae ..... Tifton.
G. M. Mitchell ..... Tifton.
N. Peterson ..... Tifton.
F. B. Pickett ..... Ty Ty.
J. M. Price ..... Tifton.
W. T. Smith ..... Tifton.
W. E. Tyson ..... Chula.

TOOMBS COUNTY.

President, R. D. McCloud.....Lyons.
Secretary, J. G. Stillwell.....Chopee.
Delegate, 1907, E. P. Bomar.....Lyons.

MEMBERS.

I. E. Aaron .....Lyons.
E. P. Bomar .....Lyons.
J. C. Collins .....Laff.
J. E. Hunt .....Vidalia.
R. D. McLeod .....Lyons.
Jas. M. Meadows .....Vidalia.
Jno. M. Meadows .....Vidalia.
W. F. Peacock .....Vidalia.
J. G. Stillwell .....Chopee.

TROUP COUNTY.

President, A. J. Tuggle.....LaGrange.
Vice-President, R. H. Jenkins ..Hogansville.
Sec.-Treas. H. W. Terrell.....LaGrange.
Delegate 1907, H. W. Terrell ..LaGrange.

MEMBERS.

B. H. Brock .....Mountville.
B. C. Daniel .....Hogansville.
A. J. Fowler .....Hogansville.
J. H. Hardy .....LaGrange, R. F. D.
A. F. Herrington .....West Point.
R. N. Hogg .....West Point.
J. S. Horsley, Sr.....West Point.
J. S. Horsley, Jr .....West Point.
R. H. Jenkins .....Hogansville.
J. F. Jones .....Hogansville.
R. A. Justice .....LaGrange.

I. H. Lane .....LaGrange.
W. R. McCall .....LaGrange.
W. H. McLendon .....Lanett, Ala.
H. McCulloch .....Lanett, Ala.
D. E. Morgan .....LaGrange.
W. E. Morgan .....LaGrange.
R. J. O'Neal .....Langsdale, Ala.
J. M. Poer .....West Point.
F. M. Ridley, Sr.....LaGrange.
F. M. Ridley, Jr.....LaGrange.
H. R. Slack .....LaGrange.
W. P. Smith .....Glenn, R. F. D. 1.
P. A. Tatum .....West Point.
T. W. Taylor .....West Point, R. F. D.
H. W. Terrell .....LaGrange.
A. J. Tuggle .....LaGrange.
R. P. White .....LaGrange, R. F. D.

TURNER COUNTY.

President, W. L. Story.....Ashburn.
Secretary, W. J. Turner .....Ashburn.
Delegate 1907, W. J. Turner.....Ashburn.

MEMBERS.

G. R. Luke .....Ashburn.
W. W. Rutland .....Ashburn.
W. L. Story .....Ashburn.
T. H. Thrasher .....Ashburn.
W. J. Turner .....Ashburn.
C. E. Walker .....Sycamore.

TWIGGS COUNTY.

Secretary, M. H. O'Daniel.....Jeffersonville.

MEMBERS.

C. E. Chapman .....Danville.

E. J. Denson ..... Allentown.
T. S. Jones ..... Jeffersonville.
E. McNair ..... Jeffersonville.
M. H. O'Daniel ..... Jeffersonville.
J. G. Slappy ..... Jeffersonville.
W. W. Wimberly ..... West Lake.
A. J. Wood ..... Fitzpatrick.

UPSON COUNTY.

Secretary, J. T. Weaver ..... Thomaston.

MEMBERS.

A. H. Black ..... Thomaston.
J. M. McKenzie ..... Thomaston.
J. C. Weaver ..... Thomaston.

WAYNE COUNTY.

MEMBERS.

J. G. Tuten ..... Jesup, Ga.

WALKER COUNTY.

President, J. M. Underwood..... LaFayette.
Secretary, J. H. Hammond..... LaFayette.
Delegate 1907, C. C. L. Rudicil... Chickamauga.

MEMBERS.

M. M. Crowder ..... Cedar Grove.
J. H. Hammond ..... LaFayette.
J. P. Hunter ..... Kensington.
W. D. Rogers ..... Kensington.
C. C. L. Rudicil ..... Chickamauga.
J. A. Shields ..... Villanow.
J. M. Underwood ..... LaFayette.
J. P. McWilliams ..... Greenbush.

D. G. Elder ..... Chickamauga
E. M. Jennings ..... Menlo.
J. S. Alsobrook ..... Ringgold.
M. W. Murphy ..... Ringgold.
D. S. Middleton ..... Rising Fawn.
J. J. Johnston ..... LaFayette.
J. W. Russey ..... Trenton.

WALTON COUNTY.

MEMBERS.

R. P. Adams ..... Bethlehem.
J. W. Smith ..... Monroe.

WARE COUNTY.

President, R. P. Izlar..... Waycross.
Secretary, A. Fleming ..... Waycross.
Delegate 1907, W. P. Williams... Blackshear.

MEMBERS.

J. B. Bagley ..... Millwood.
L. J. Burch ..... Folkston.
A. P. English ..... Waycross.
A. Fleming ..... Waycross.
F. C. Folks ..... Waycross.
G. P. Folks ..... Waycross.
N. A. Frier ..... Bickley.
R. P. Izler ..... Waycross.
M. M. Johnson ..... Waycross.
J. H. Latimer ..... Waycross.
J. E. Lee ..... Waycross.
J. K. Maloy ..... Beach.
W. N. Nanny ..... Waycross.
T. E. Oden ..... Blackshear.
C. R. Oglesby ..... Waycross.

J. H. Redding ..... Waycross.
J. C. Rippard ..... Waycross.
J. E. W. Smith ..... Waycross.
J. L. Walker ..... Waycross.
W. P. Williams ..... Blackshear.
J. C. Wright ..... Folkston.

WARREN COUNTY.

President, E. G. Scruggs..... Warrenton.
Secretary, R. D. Nash..... Norwood.
Delegate 1907, G. R. Maner..... Warrenton.

MEMBERS.

G. R. Maner ..... Warrenton.
R. D. Nash ..... Norwood.
E. G. Scruggs ..... Warrenton.
W. W. Pilcher ..... Warrenton.
G. R. Patillo ..... Canon.

WASHINGTON COUNTY.

President, O. L. Rogers..... Sandersville.
Vice-President, J. H. Evans..... Davisboro.
Sec.-Treas. R. H. Thigpenen.... Sandersville.
Delegate 1907, Wm. Rawlings... Sandersville.

Board of Censors:

E. A. Harris ..... Sandersville.
C. D. Redding ..... Warthen.
D. L. Cheatham ..... Sandersville.

MEMBERS.

D. L. Cheatham ..... Sandersville.
J. P. Davis ..... Riddleville.
J. B. Dillard ..... Davisboro.
J. H. Evans ..... Davisboro.

L. A. Graybill ..... Oconee.
E. A. Harris ..... Sandersville.
D. C. Harrison ..... Harrison.
H. A. Herman ..... Sandersville.
D. E. McMaster ..... Tennille.
L. O. McBride ..... Oconee.
G. W. Malone ..... Sandersville.
S. B. Malone ..... Sandersville.
R. L. Miller ..... Tennille.
P. C. Nunn ..... Sandersville, R. F. D
J. E. Peeler ..... Deepstep.
C. D. Redding ..... Warthen.
Wm. Rawlings ..... Sandersville.
O. L. Rogers ..... Sandersville.
R. H. Thigpen ..... Sandersville.
W. B. Warthen ..... Bartow.

WILKES COUNTY.

President, R. A. Simpson..... Washington.
Secretary, A. W. Simpson..... Washington.
Delegate 1907, R. J. McNeil..... Danmurg.

MEMBERS.

J. E. Amason, ... Washington, R. F. D.
R. J. McNeil ..... Danburg.
H. M. Sale ..... Tignall, R. F. D.
A. W. Simpson ..... Washington.
R. A. Simpson ..... Washington.
E. L. Sterkey ..... Metasville.
T. J. Willis ..... Washington.

WORTH COUNTY.

President, J. T. Bridges..... Sylvester.
Secretary, L. F. Grubbs..... Sylvester.
Delegate 1907, H. M. Jeffords....Sylvester.

MEMBERS.

C. T. Ameson .....Doles.
T. J. Bridges .....Sylvester.
E. D. Ford .....Isabella.
L. F. Grubb .....Sylvester.
R. N. Hicks .....Bridgeboro.
H. M. Jeffords .....Sylvester.
R. R. Pickett .....Sumner.
W. L. Sikes .....Sylvester.
J. L. Tracy .....Sylvester.

HONORARY MEMBERS.

BARTOW COUNTY.

F. R. Calhoun .....Cartersville.

BIBB COUNTY.

E. G. Ferguson .....Macon.
H. A. Mettaur .....Macon.

CARROLL COUNTY.

W. W. Fitts .....Carrollton.

COBB COUNTY.

G. Tennent .....Marietta.
E. J. Setz .....Marietta.

COWETA COUNTY.

F. M. Brantley .....Senoia.
J. W. Quillian .....Newnan.

DECATUR COUNTY.

J. E. Morgan .....

FAYETTE COUNTY.

E. B. Weldon ..... Inman.

FANNIN COUNTY.

T. T. Fain ..... Blue Ridge.

FULTON COUNTY.

W. L. Jones ..... Atlanta.

HABERSHAM COUNTY.

James P. Phillips ..... Clarkesville.

MONROE COUNTY.

O. C. Collins ..... Forsyth.

TALBOT COUNTY.

E. L. Bardwell ..... Talbotton.

TERRELL COUNTY.

W. C. Kendrick ..... Dawson.
W. E. Lundy ..... Sasser.

THOMAS COUNTY.

J. H. Jenkins ..... Thomasville.

WARREN COUNTY.

E. G. Scruggs ..... Warrenton.

WASHINGTON COUNTY.

Henry C. Hodges ..... Hebron.
S. B. Mills ..... Sandersville.

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